

Year 2001 Growth Update:
Interpretive Notes for the Academic Performance Index

David Rogosa
Stanford University
December 30, 2001

rag@stat.stanford.edu

Year 2001 Growth Update:
Interpretive Notes for the Academic Performance Index
David Rogosa
Stanford University
December 30, 2001

This report is the third (and last) in a series of data analysis efforts on the API Index constructed from Stanford 9 (STAR) test data. The analyses of year-to-year improvement from 2000 to 2001 in the first section are based on the year 2001 Growth and year 2000 Base API data; the first section repeats the displays contained in Section 2 of the previous document: "Year 2000 Update: Interpretive Notes for the Academic Performance Index". In addition, the second section of this report presents analyses of improvement over the three year period of API reporting, 1999-2001.

Section 1. Describing 2000-2001 Improvement for Schools and Subgroups

A. Describing Improvement for Schools

B. Describing Improvement for Subgroups

Section 2. API Scores over three years: See-saw or Staircase?

A. Describing Three Years of Scores

B. Staircase or See-saw?

C. Additional Displays

General themes in Section 1 are that the improvement from 2000 to 2001 is less than that seen in the 1999-2000 interval. Again, the improvement of schools in the upper deciles is about half of that in the lower deciles (and as in the Year 2000 Update an investigation of "topping-out" is pursued). Perhaps of greatest interest is that the improvement of students in the Socioeconomically Disadvantaged (SD) subgroup (and also the African-American and Hispanic subgroups) is at least as large as the whole student population, even for students in the lower-decile schools. This pattern was also demonstrated for the 1999-2000 interval in the Year 2000 Update report.

The main story in Section 2 is the reasonable consistency of improvement over the three year period 1999-2001. In many news reports and public statements various parties have used a "see-saw" metaphor to refer to the three years of API data, presumably indicating either a "V" or "inverted V" pattern for a school's score (e.g. schools making initial gains in '99-00 fall back in '00-01). Statewide results for Elementary, Middle, and High Schools indicate that for each school that moves up and down there are many schools making steady improvement. A better metaphor would be schools on an ascending staircase rather than riding a see-saw.

List of Tables,
Year 2001 Growth Update: Interpretive Notes for the Academic Performance Index

Table 1. Describing Improvement for Elementary Schools

Table 2. Describing Improvement for Middle Schools

Table 3. Describing Improvement for High Schools

Table 4. Improvement for Subgroups: Elementary Schools
Description of School Scores for Subgroups (n > 9)

Table 5. Individual Level Improvement, Elementary School Students

Table 6. Improvement for Subgroups: Middle Schools
Description of School Scores for Subgroups (n > 9)

Table 7. Improvement for Subgroups: High Schools
Description of School Scores for Subgroups (n > 9)

Table 8. Data Description, API 1999-2001

Table 9. Consecutive Improvement?

Table 10. Crosstabulation of Year 2000 and Year 2001 Decile Ranks for each 1999 Decile

List of Figures, Year 2001 Growth Update: Interpretive Notes for the Academic Performance Index

Figure 1. Scatterplot of improvement in years 2000-2001 vs year 2000 API score, Elementary Schools

Figure 2. Scatterplot of improvement in years 2000-2001 vs year 2000 API score, Middle Schools

Figure 3. Scatterplot of improvement in years 2000-2001 vs year 2000 API score, High Schools

Figure 4. 3D Scatterplot for year 1999, 2000, and 2001 API scores, Elementary Schools

Figure 5. 3D Scatterplot for year 1999, 2000, and 2001 API scores, Middle Schools

Figure 6. 3D Scatterplot for year 1999, 2000, and 2001 API scores, High Schools

Figure 7. Scatterplot of improvement in years 2000-2001 vs improvement in years 1999-2000 API scores, Elementary Schools

Figure 8. Scatterplot of improvement in years 2000-2001 vs improvement in years 1999-2000 API scores, Middle Schools

Figure 9. Scatterplot of improvement in years 2000-2001 vs improvement in years 1999-2000 API scores, High Schools

Figure 10. Scatterplot of improvement in years 2000-2001 vs improvement in years 1999-2000 API scores, Elementary Schools,
Colorized with GPA Award Status: Black [no2k, no01], Red [yes2k, no01], Yellow [no2k, yes01], Green [yes2k, yes01]

Figure 11. Scatterplot of improvement in years 2000-2001 vs improvement in years 1999-2000 API scores, Middle Schools
Colorized with GPA Award Status: Black [no2k, no01], Red [yes2k, no01], Yellow [no2k, yes01], Green [yes2k, yes01]

Figure 12. Scatterplot of improvement in years 2000-2001 vs improvement in years 1999-2000 API scores, High Schools
Colorized with GPA Award Status: Black [no2k, no01], Red [yes2k, no01], Yellow [no2k, yes01], Green [yes2k, yes01]

Figure 13. Scatterplots of improvement in years 2000-2001 vs improvement in years 1999-2000 API scores, Elementary Schools
at each 1999 Statewide Decile (CA Rank 1,...,10)

Section 1. Describing 2000-2001 Improvement for Schools and Subgroups

In the first subsection, Tables 1,2,3 are used to describe school-level improvement in 2000 and 2001 API scores. These tables repeat for the 2000-2001 interval the displays that were shown in Tables 9,11,12 of the "Year 2000 update" document (which analyzed 1999-2000 interval). In the second subsection, Tables 4,5,6,7 are used to describe improvement of students classified in subgroups, both for the larger ethnic subgroups and the Socioeconomically Disadvantaged (SD) subgroup. The corresponding tables in the "Year 2000 update" document are Tables 13-16. Readers may find it useful to juxtapose those tables for the 1999-2000 interval with the tables below.

A. Describing Improvement for Schools

Tables 1,2,3 have identical structure, containing data analysis displays describing school improvement for each of the three school types (Elementary, Middle, High) in turn. The top two portions of each table give the overall description: first separately for the years 2000 and 2001, and secondly for the subset of schools present in both years. Also for the subset of schools present both years, the improvement (denoted as APIimp) for each school is obtained and included in the description. For example, in Table 1, descriptive statistics are given for 4776 Elementary Schools for year 2000 data and 4815 for year 2001 data. Of those 4776 year 2000 schools, 4724 are also present in the year 2001 data, and improvement (APIimp) is computed for those schools.

Improvement is less than in the previous 1999-2000 interval. Over 79% of Elementary Schools did improve their school-wide API score in the 2000-2001 interval. For 2000-2001 half the Elementary Schools improved at least 19 points (down from the median improvement of 36 points in 1999-2000 interval in which three-quarters of Elementary schools improved at least 19 points). Tables 2 and 3 show smaller overall improvement for Middle Schools and smaller still for High Schools; for High Schools 44% had no improvement or decline in 2000-2001 (up from 24% in 1999-2000).

The initial "Interpretive Notes" provided some rough equivalences for API scores--for example the median Elementary School improvement of 19 API points could be obtained by each student in the school improving 2 percentile points on each test (i.e. one or two additional items correct).

The third item in Tables 1, 2, 3 labeled as, "Descriptive Statistics: APIimp by CARank_2k", describes improvement separately for each year 2000 statewide decile. For example, Table 1 shows 463 Elementary Schools in the lowest statewide decile for year 2000 (and also included in the year 2001 API). Half of those schools showed improvement of at least 37 points. Elementary Schools in the lower deciles do show substantial improvement, though less than that for the 1999-2000 interval (median improvement a third or more less). Middle Schools follow a similar pattern, but High Schools show little improvement.

Classification of Elementary Schools by their 1999 statewide decile (instead of by the year 2000 decile) produces almost identical results

for 2000-2001 improvement (medians within a point or two of the results in Table 1). Analyses in section 2 provide demonstrations of the consistency in improvement over the three-year API period.

The next item in each table is the correlation matrix showing the correlation between APIimp and API_2k, the negative values of which result from the smaller improvement by schools scoring relatively well in 2000. The same feature is seen in APIimp vs API_2k scatterplots for each school type. These results and plots are similar to those seen for the 1999-2000 improvement.

Results for improvement in the PAC50 measure at the bottom of each table provide little additional information, but are included for conformity with the 1999-2000 analyses. The purpose of those analyses, discussed in some detail in the "Year 2000 update" was an attempt to understand the smaller improvement seen in the higher scoring schools, a situation which persists in the 2000-2001 data. The conclusion in the "Year 2000 update" document was that a large enough number of students in the higher scoring schools (e.g., deciles 9 and 10 schools in 1999) simply don't have much room to improve with standardized test scores reported in a percentile rank metric. A closer look at this topping out on the Stanford 9 tests is provided for the year 2000 data. A separate document located at <http://www-stat.stanford.edu/~rag/api/opbydecile2kelem.zip> contains a set of tables for student scores in Math and Reading. These tables display for all Elementary school students who are included in the year 2000 API the observed Stanford 9 national percentile rank by school year 2000 decile. Tables are given for all students, and also for students classified in the White and Asian subgroups. In terms of the contribution to school API scores in Table 1, any percentile rank of 80 or above affords no opportunity for improvement. For students in decile 10 Elementary schools .626 in Math and .512 in Reading are at or above the 80th percentile (i.e. topping out in API metric). Thus topping out may be a large part of the explanation for the smaller improvement seen for schools in the top deciles.

Table 1. Describing Improvement for Elementary Schools

Descriptive Statistics: API_2k, API_01 for all Elementary Schools

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
API_2k	4776	671.30	674.13	568.53	773.50	345.88	966.88
API_01	4815	690.71	691.50	592.75	789.00	339.31	974.75

Of the 4776 year 2000 Elementary Schools, 4724 present both years

Descriptive Statistics: API_2k, API_01, APIimp, for 4724 present both years

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
API_2k	4724	671.59	674.13	568.63	774.59	345.88	966.88
API_01	4724	692.63	693.63	595.00	789.88	339.31	974.75
APIimp	4724	21.04	19.03	3.37	37.47	-136.13	145.69

Descriptive Statistics: APIimp by CARank_2k

CARank2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	463	38.35	36.94	16.75	59.25	-56.00	139.75
2	472	33.24	34.44	13.09	51.47	-79.88	145.69
3	481	26.39	24.88	5.81	46.25	-64.50	138.25
4	474	23.80	24.50	5.16	40.53	-86.63	137.88
5	474	20.46	20.75	4.81	37.53	-136.13	109.25
6	464	18.91	17.94	0.91	37.94	-91.63	90.63
7	468	17.09	18.38	1.88	33.13	-104.75	97.25
8	472	14.42	14.00	0.41	28.75	-65.13	89.75
9	473	11.39	13.25	-0.31	23.94	-65.87	57.37
10	483	6.90	7.63	-3.25	16.00	-77.00	49.62

Correlations: API_2k, API_01, APIimp

	API_2k	API_01
API_01	0.978	
APIimp	-0.332	-0.127

[see Fig. 1, APIimp vs API_2k scatterplot]

Comparison with PAC50 Measure

Descriptive Statistics: PAC50_2k, PAC50_01, pac50imp

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
PAC50_2k	4724	0.52616	0.52057	0.36256	0.68396	0.09067	0.97937
PAC50_01	4724	0.55622	0.55157	0.40033	0.70758	0.08110	0.98486
pac50imp	4724	0.03006	0.02765	0.00303	0.05664	-0.17633	0.22662

Descriptive Statistics: pac50imp by CARank_2k

CARank2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	463	0.04747	0.04367	0.01773	0.07339	-0.05682	0.17551
2	472	0.04558	0.04340	0.01717	0.07278	-0.09354	0.20605
3	481	0.03647	0.03137	0.00452	0.06757	-0.08917	0.22662
4	474	0.03452	0.03387	0.00520	0.06219	-0.11749	0.21411
5	474	0.03058	0.03003	0.00462	0.05750	-0.17633	0.18243
6	464	0.02953	0.02979	-0.00159	0.06454	-0.14276	0.17126
7	468	0.02651	0.02771	-0.00018	0.05325	-0.16180	0.14941
8	472	0.02290	0.02332	-0.00040	0.04681	-0.12000	0.12903
9	473	0.01769	0.01990	-0.00232	0.04059	-0.11084	0.11206
10	483	0.01003	0.01111	-0.00500	0.02344	-0.15027	0.07385

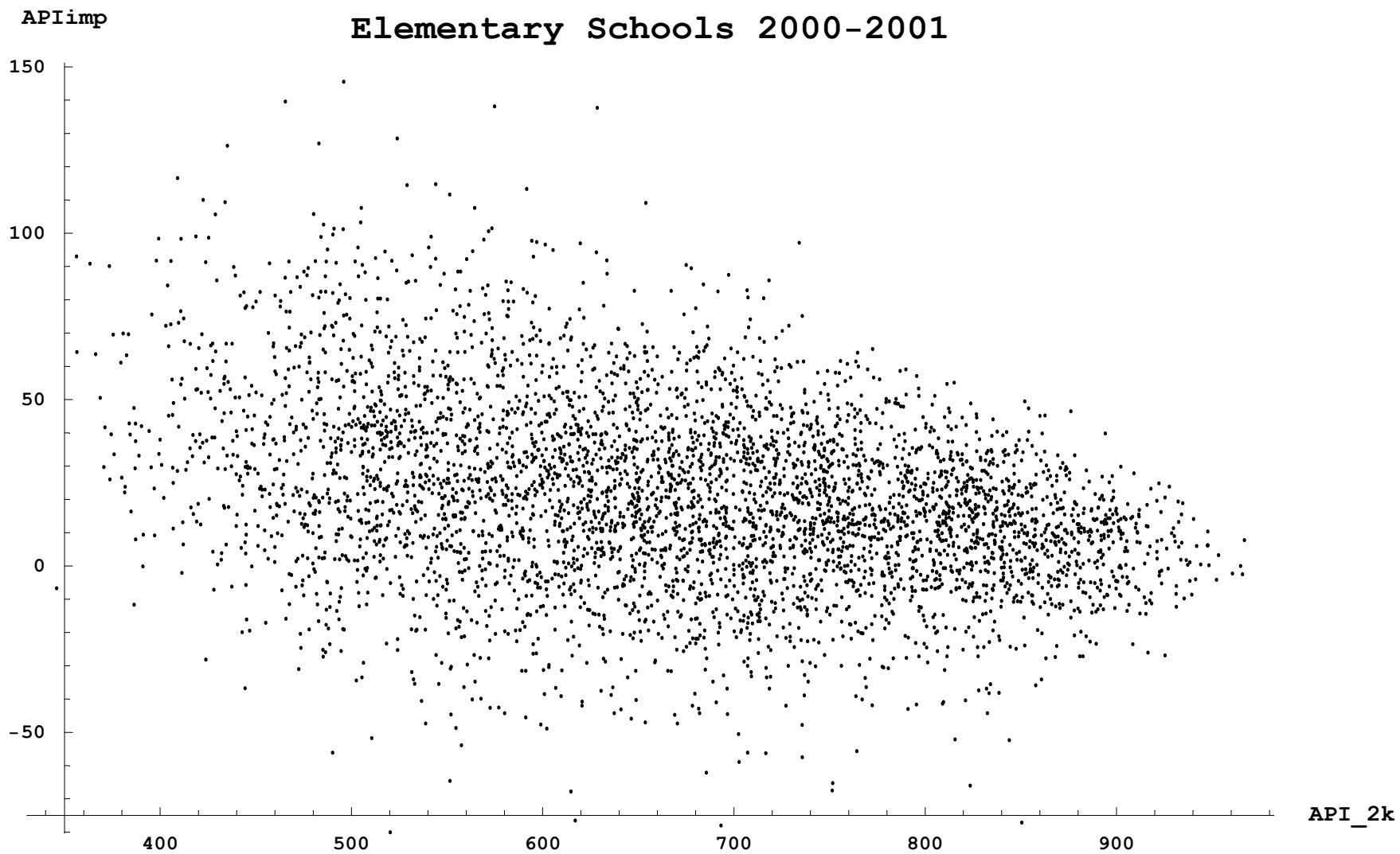


Figure 1.

Table 2. Describing Improvement for Middle Schools

Descriptive Statistics: API_2k, API_01 for all Middle Schools

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
API_2k	1125	655.15	656.25	559.00	749.75	357.94	948.63
API_01	1126	668.32	668.50	575.50	764.00	368.94	958.88

Of the 1125 year 2000 Middle Schools, 1102 present both years,

Descriptive Statistics: API_2k, API_01, APIimp for 1102 present both years

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
API_2k	1102	655.81	656.69	559.06	752.00	357.94	948.63
API_01	1102	668.82	668.50	576.28	764.00	384.38	958.88
APIimp	1102	13.00	11.75	-0.64	26.25	-89.94	156.69

Descriptive Statistics: APIimp by CARank_2k

CARank2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	109	20.84	18.38	5.03	33.13	-41.75	156.69
2	110	20.66	21.09	3.81	42.23	-89.94	71.13
3	111	14.85	14.50	-1.63	30.50	-58.44	69.13
4	107	12.80	13.75	-3.50	28.38	-40.63	83.50
5	113	12.76	13.63	-1.19	26.00	-29.50	58.88
6	111	12.78	13.38	-3.25	29.00	-44.63	57.25
7	103	12.70	11.50	-1.00	26.13	-42.88	72.25
8	110	7.05	6.56	-6.56	17.34	-39.75	74.25
9	113	9.88	9.38	-0.56	18.56	-42.88	56.00
10	115	6.12	7.13	-1.00	13.88	-40.75	44.00

Correlations: API_2k, API_01, APIimp

	API_2k	API_01
API_01	0.983	
APIimp	-0.199	-0.019

[see Fig. 2, APIimp vs API_2k scatterplot]

Comparison with PAC50 Measure

Descriptive Statistics: PAC50_2k, PAC50_01, pac50imp

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
PAC50_2k	1102	0.49726	0.49014	0.34012	0.64474	0.09651	0.96179
PAC50_01	1102	0.51617	0.51245	0.36407	0.66617	0.11272	0.97595
pac50imp	1102	0.01891	0.01703	-0.00224	0.03918	-0.12085	0.17776

Descriptive Statistics: pac50imp by CARank_2k

CARank2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	109	0.02532	0.01978	0.00742	0.04265	-0.04617	0.17776
2	110	0.02738	0.02591	0.00165	0.05565	-0.12085	0.09845
3	111	0.01965	0.01825	-0.00397	0.04449	-0.08038	0.10913
4	107	0.01984	0.01801	-0.00574	0.04620	-0.06500	0.13098
5	113	0.01956	0.01709	-0.00250	0.04581	-0.05878	0.09412
6	111	0.01904	0.01978	-0.00745	0.04016	-0.04877	0.11975
7	103	0.02032	0.02002	-0.00525	0.04468	-0.08105	0.12561
8	110	0.01262	0.01160	-0.00772	0.02930	-0.06030	0.11841
9	113	0.01678	0.01709	-0.00201	0.03271	-0.07056	0.09338
10	115	0.00924	0.00928	-0.00488	0.02441	-0.05798	0.06567

Figure 2.

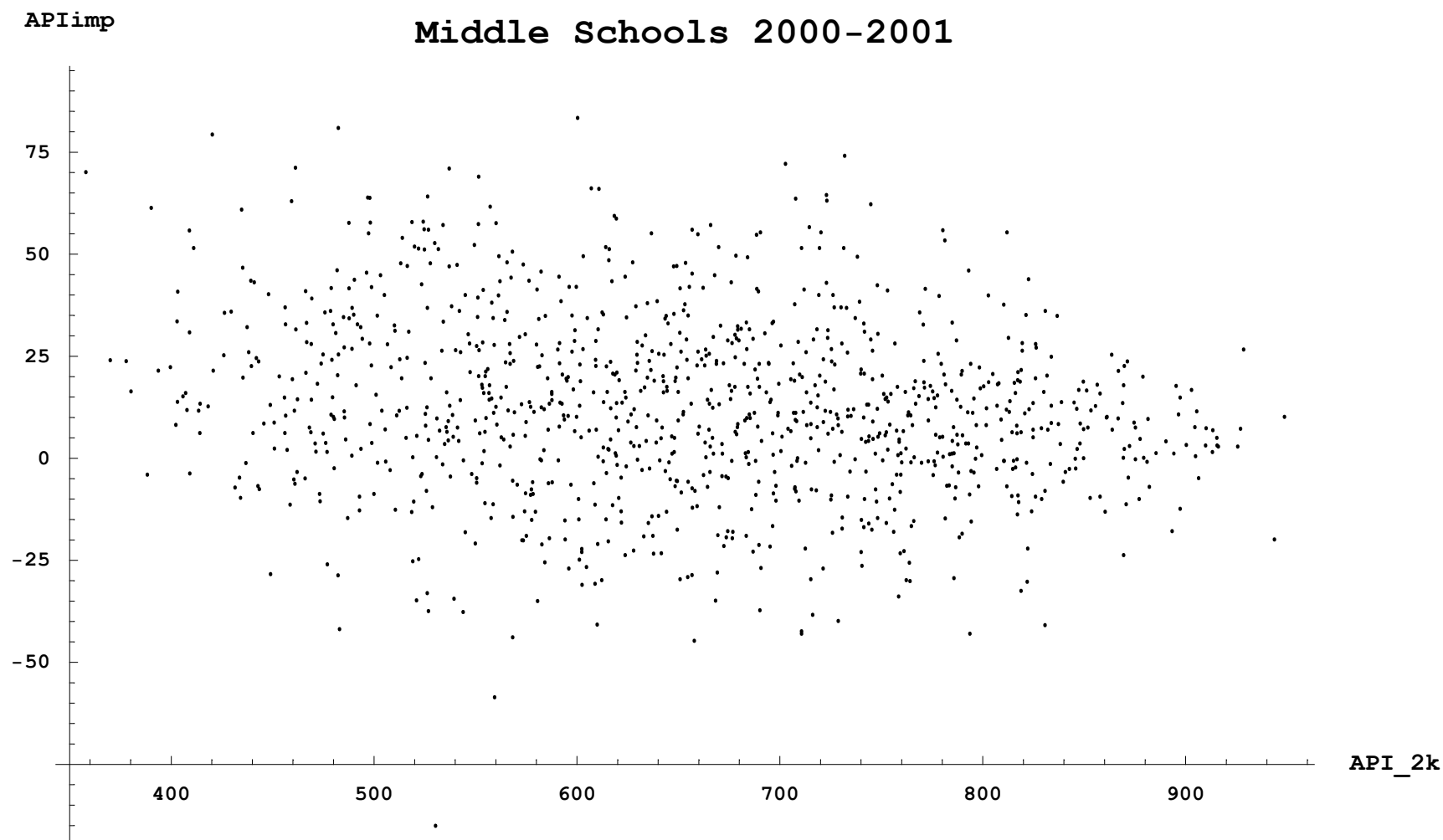


Table 3. Describing Improvement for High Schools

Descriptive Statistics: API_2k, API_01 for all High Schools

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
API_2k	854	634.04	638.19	556.34	713.16	339.44	969.38
API_01	836	637.16	635.88	560.06	714.81	342.56	968.38

Of the 854 year 2000 High Schools, 828 present both years.

Descriptive Statistics: API_2k, API_01, APIimp for 812 present both years

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
API_2k	828	634.54	638.25	558.13	712.03	339.44	969.38
API_01	828	636.66	635.38	559.91	714.88	342.56	968.38
APIimp	828	2.116	2.500	-9.88	15.09	-107.38	83.75

Descriptive Statistics: APIimp by CARank_2k

CARank2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	75	4.66	3.13	-8.31	16.31	-40.31	44.13
2	80	5.78	4.72	-5.25	15.88	-40.56	57.44
3	87	5.39	8.63	-9.00	18.13	-69.44	77.88
4	81	0.04	2.50	-12.13	15.88	-62.25	52.13
5	86	1.16	-2.75	-14.25	14.28	-47.50	74.13
6	81	0.70	-2.25	-14.38	16.50	-64.13	83.75
7	87	1.33	2.88	-11.13	15.50	-107.38	57.25
8	85	2.28	2.50	-10.38	16.31	-57.63	76.38
9	83	0.59	2.13	-9.75	13.63	-58.25	48.50
10	83	-0.58	-0.25	-9.63	9.88	-63.50	37.00

Correlations: API_2k, API_01, APIimp

	API_2k	API_01
API_01	0.981	
APIimp	-0.081	0.115

[see Fig. 3, APIimp vs API_2k scatterplot]

Comparison with PAC50 Measure

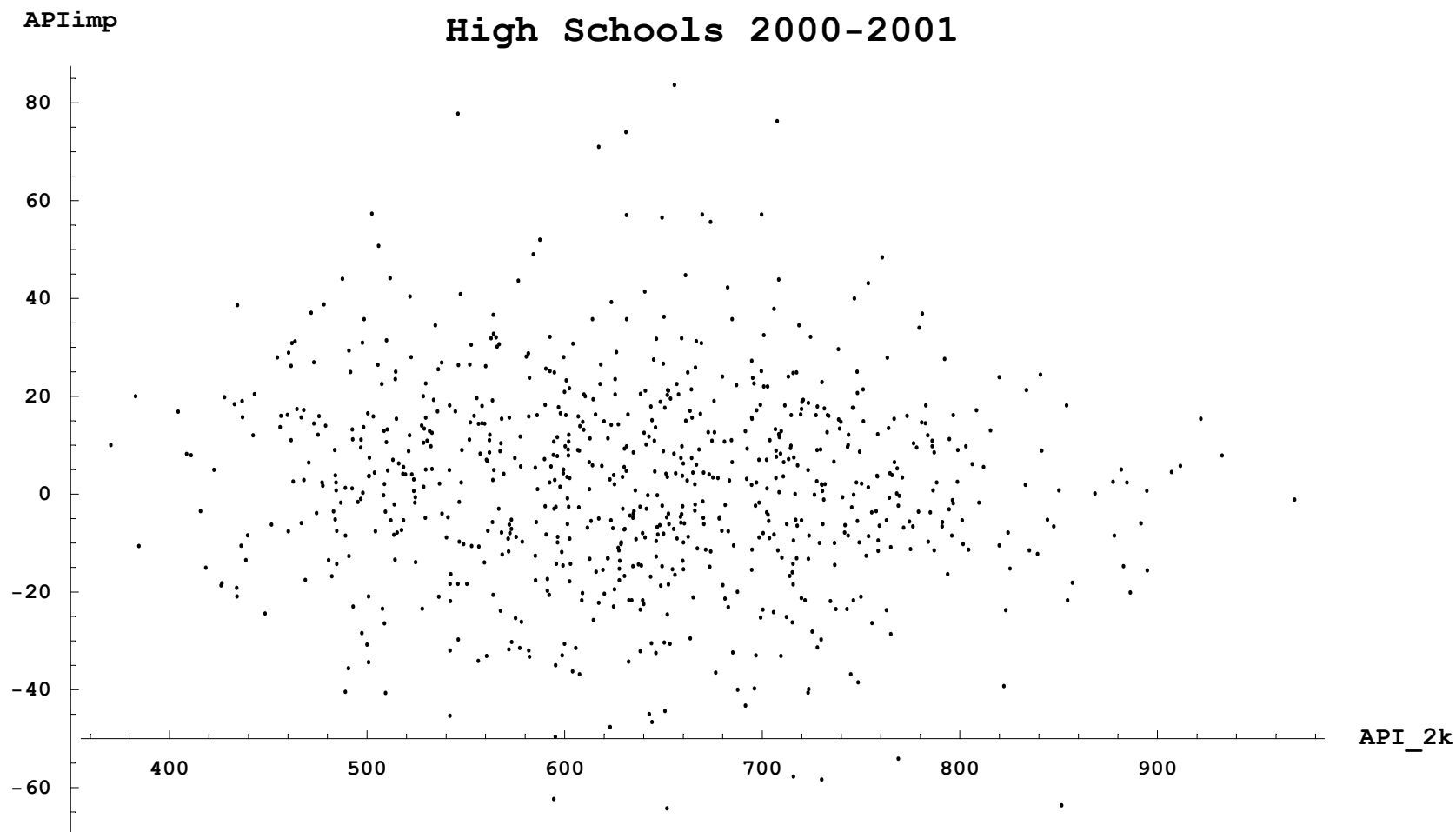
Descriptive Statistics: PAC50_2k, PAC50_01, pac50imp

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
PAC50_2k	828	0.47173	0.47690	0.34459	0.59348	0.08174	0.98145
PAC50_01	828	0.47703	0.47070	0.35020	0.59918	0.07518	0.97791
pac50imp	828	0.00530	0.00562	-0.01289	0.02415	-0.14758	0.12793

Descriptive Statistics: pac50imp by CARank_2k

CARank2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	75	0.00819	0.00912	-0.01028	0.02380	-0.04620	0.05743
2	80	0.01059	0.00989	-0.00616	0.03318	-0.05630	0.07635
3	87	0.01081	0.01245	-0.00677	0.02979	-0.09503	0.10883
4	81	0.00376	0.00562	-0.01666	0.02298	-0.08368	0.08331
5	86	0.00400	0.00153	-0.01543	0.02005	-0.05750	0.11298
6	81	0.00307	0.00250	-0.01990	0.02310	-0.10449	0.12744
7	87	0.00519	0.00378	-0.01465	0.02673	-0.14758	0.09546
8	85	0.00605	0.00647	-0.01501	0.02655	-0.07813	0.12793
9	83	0.00322	0.00439	-0.01428	0.02551	-0.07471	0.07666
10	83	-0.00174	-0.00208	-0.01416	0.01379	-0.09399	0.06519

Figure 3.



B. Describing Improvement for Subgroups

In addition to the school API scores, scores for subgroups are of interest both for the award programs and for using the API to provide information on California schools and students. Tables 4, 6, 7 have identical structure, containing data analysis displays describing school improvement for subgroups for each of the three school types (Elementary, Middle, High) in turn. The subgroups examined are Socioeconomically Disadvantaged (SD), African-American (AfAM), Asian, Hispanic (Hisp), and White. Within each school type (table) descriptive statistics are shown for each of these five subgroups. Displayed in the top portion are descriptive statistics for 2000 and 2001 statewide data and the improvement overall; below that are shown descriptive statistics for improvement broken down by each year 2000 statewide decile.

Before turning to the results, here are some additional details on the construction of these numbers. Take, for example, the SD subgroup in Table 4. For each of the 4724 Elementary Schools having 2000 and 2001 API data, compute for each year an API score for the SD subgroup (in the manner that subgroup scores are computed in the school API reports). Include in the analysis (here Table 4) all scores from schools having at least 10 SD students in the school, which reduces the number of schools to 4532 for SD. The screening on group size is done to mitigate, in part, the distorting effects of very small groups contributing as much in these displays as schools with 100 or 200 SD students. That is, the displays in Tables 4,6,7 are based on school-level scores keeping with the school-level reporting of the API; for more on this see the discussion of Table 5.

Onto the results. One somewhat striking result is obtained by comparing Table 4 and Table 1 for Elementary schools (or Table 6 and Table 2 for Middle schools). The improvement for the SD subgroup matches or exceeds the improvement in school scores, whether looked at overall or by decile. Scores for Hispanic subgroup also improve more than school scores, and scores for the African-American subgroups improve about the same as school-wide scores. The same pattern holds for Middle Schools. These tables are put there for the scanning, and the reader is encouraged to pursue and peruse according to their own interests.

Table 5 presents results for California elementary school students, computed at the "individual level". The calculations start with the same basic data as used in Table 4, but there is no grouping of the students by school, and therefore Table 5 differs from the style of API reporting. Use the SD subgroup to describe the calculations. In 2000 there were 965362 SD students in schools that were part of the API Elementary Schools reporting. Treating those 965362 SD students as constituting one large school, use their Stanford 9 scores to compute an API score. That's the 553 value labeled as "API2k" in Table 5. Repeat that calculation for year 2001 data to obtain a "school" of size 1002361 with API01 579. The improvement sdimp with value 26 is the difference between these scores. The improvement is nearly identical to the SD results in Table 4, although the 2000 and 2001 scores in Table 4 are nearly 50 points higher. That 50 points represents the effect/distortion of using the mean of school means to represent the mean of individuals. For SD students, large numbers tend to be found in lower scoring schools, with some higher scoring schools

having small groups of SD students. The mean of school means gives the smaller groups and the larger groups equal weight, and therefore will be larger for SD than the mean of all individuals.

Below the Statewide Results in Table 5, are results broken down by the 2000 school decile. The calculations for each decile rank are similar to the Statewide calculation. For example, start with all students classified as SD who are in Elementary Schools which were classified in the lowest statewide decile (CARank 1) in 2000. That classification produces 210505 students with year 2000 Stanford 9 scores and 214633 students with year 2001 Stanford 9 scores. Compute an API score, treating the 210505 students with year 2000 Stanford 9 scores as one large school, to produce an API2k for CARank2k=1 with value 443.563. Repeat with the year 2001 student scores to produce an API01 for CARank2k=1 with value 484.25. The improvement sdimp with value 40.69 is the difference between these scores.

One interesting, but not surprising, feature seen from Table 5 is that for each subgroup mean student scores increase as the statewide decile that their school belongs to increases. That is, for SD students, the scores of the SD students in a statewide decile increases about 30 points for each step-up in statewide decile.

But the main focus is on improvement, and it's interesting (and reasonable) that the improvement seen from the individual-level data analysis in Table 5 closely matches the school-level analysis in Table 4 for each of the subgroups. Compare improvement values in Table 5 with those in Table 4 on both statewide improvement and improvement broken down by 2000 statewide rank to see that the Table 4 results for improvement are replicated in the "purer" individual level analysis of Table 5. Both types of analyses show that these subgroups are making appreciable year-to-year gains.

Table 4. Improvement for Subgroups: Elementary Schools
Description of School Scores for Subgroups (n > 9)

Socio-economically Disadvantaged							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
SD_2k	4532	602.78	598.63	529.25	673.22	339.25	935.50
SD_01	4532	627.27	624.38	556.53	693.25	339.44	955.75
sdimp	4532	24.49	25.25	1.25	48.98	-250.25	245.25

Descriptive Statistics: sdimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	463	39.31	38.13	17.38	61.75	-57.06	140.63
2	472	35.02	34.97	14.52	54.48	-81.06	147.94
3	481	27.20	25.38	5.88	49.25	-65.38	137.44
4	474	28.71	29.75	6.06	47.94	-108.13	170.63
5	474	25.27	24.94	3.84	45.53	-140.50	143.13
6	462	23.60	21.25	-1.25	47.25	-94.00	167.75
7	466	23.57	24.06	-1.88	50.53	-159.00	155.63
8	468	16.75	17.00	-7.22	42.88	-150.13	160.00
9	450	12.90	16.56	-15.78	43.53	-216.50	245.25
10	322	6.45	8.81	-29.84	42.59	-250.25	180.25

African-American

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
AfAm_2k	2530	598.32	594.19	518.34	677.63	300.44	954.25
AfAm_01	2526	622.50	619.44	544.22	700.41	304.00	990.63
afamimp	2526	24.10	23.03	-13.41	59.50	-271.38	339.56

Descriptive Statistics: afamimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	265	30.98	26.56	-3.16	62.53	-131.19	339.56
2	270	30.66	30.44	-3.38	64.13	-198.00	330.50
3	316	30.34	26.63	-5.56	65.78	-164.88	257.25
4	300	27.15	25.81	-16.45	67.16	-236.00	297.88
5	286	24.23	21.50	-9.50	57.91	-159.81	252.63
6	279	16.80	17.00	-15.13	56.75	-271.38	208.25
7	261	18.23	18.75	-25.31	56.13	-171.88	241.38
8	244	19.93	17.50	-14.44	55.00	-214.50	312.25
9	179	18.27	24.13	-21.38	50.00	-158.75	212.63
10	126	17.05	11.13	-26.56	54.31	-127.50	258.75

Asian							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
Asian_2k	2609	782.01	804.25	713.50	879.75	361.44	992.88
Asian_01	2601	800.00	823.88	735.38	893.69	317.63	992.75
asianimp	2601	18.07	15.37	-7.00	43.81	-465.87	299.50

Descriptive Statistics: asianimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	142	36.39	40.44	5.00	73.69	-184.00	286.00
2	191	33.39	35.75	-0.25	68.75	-373.25	186.13
3	232	19.82	21.94	-12.31	56.63	-465.88	299.50
4	224	26.50	32.38	-4.75	57.69	-219.25	195.88
5	242	18.86	18.38	-13.00	49.25	-208.75	191.63
6	248	18.90	22.81	-11.38	48.75	-109.75	157.50
7	278	19.45	15.50	-8.34	43.78	-112.38	213.50
8	286	14.86	13.63	-10.00	36.69	-165.13	166.00
9	340	11.27	12.00	-3.84	28.63	-233.75	207.13
10	418	5.26	6.69	-7.16	18.69	-192.50	109.75

Hispanic							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
hisp_2k	4517	606.79	595.75	522.56	684.69	297.63	943.75
hisp_01	4516	633.19	624.00	553.53	710.25	265.00	954.63
hispimp	4516	26.45	27.25	2.25	51.62	-226.00	189.00

Descriptive Statistics: hispimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	458	41.18	39.63	18.05	62.55	-58.19	170.75
2	469	34.42	34.38	14.63	52.81	-226.00	170.38
3	472	30.27	29.25	6.16	53.13	-70.75	142.88
4	466	28.64	30.00	5.25	50.13	-106.88	173.38
5	468	27.34	29.69	6.59	52.06	-119.13	140.25
6	450	24.24	24.19	0.47	48.44	-124.75	156.63
7	450	26.11	27.75	-3.88	54.66	-92.38	189.00
8	449	23.27	21.88	-5.38	51.75	-106.88	170.75
9	446	18.12	16.19	-9.84	49.38	-148.13	164.25
10	388	7.34	10.88	-18.94	32.81	-152.63	151.88

White							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
white_2k	4186	741.04	749.44	675.03	819.16	280.31	972.50
white_01	4186	759.56	769.63	698.34	833.25	295.00	971.00
whiteimp	4186	18.52	15.62	-1.75	36.53	-162.75	269.19

Descriptive Statistics: whiteimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	225	35.38	36.50	-2.38	74.69	-160.94	204.56
2	337	34.18	31.31	-0.31	68.28	-217.25	218.88
3	398	24.01	23.63	-5.31	53.72	-229.00	200.13
4	447	22.26	22.38	1.75	42.25	-156.63	159.63
5	455	18.68	18.25	-2.25	41.25	-150.75	124.00
6	445	18.76	17.00	-2.38	37.81	-88.13	222.13
7	454	15.86	16.94	-0.03	32.53	-88.50	83.00
8	472	13.04	12.19	-1.00	28.78	-140.13	118.50
9	470	10.21	11.44	-2.19	23.37	-128.50	74.62
10	483	7.36	6.87	-2.87	16.37	-76.00	80.62

Table 5. Individual Level Improvement, Elementary School Students

Socio-economically Disadvantaged					
Statewide Results					
NAPI2k	API2k	NAPI01	API01	sdimp	
965362	553.375	1002361	579.250	25.875	
CARank2k	NAPI2k	API2k	NAPI01	API01	sdimp
1	210505	443.563	214633	484.250	40.687
2	170618	504.438	173290	539.625	35.187
3	144827	543.750	146918	569.625	25.875
4	118120	572.625	118868	600.625	28.000
5	98881	597.875	99546	622.750	24.875
6	77618	631.375	76949	652.125	20.750
7	59674	655.250	58992	675.125	19.875
8	45421	693.750	44484	706.125	12.375
9	27457	723.250	26826	738.875	15.625
10	12241	776.750	11733	782.500	5.750
African-American					
Statewide Results					
NAPI2k	API2k	NAPI01	API01	afamimp	
138872	568.875	138224	594.125	25.250	
CARank2k	NAPI2k	API2k	NAPI01	API01	afamimp
1	24703	434.313	22793	463.188	28.875
2	19602	499.625	18444	529.875	30.250
3	20491	538.125	20048	561.625	23.500
4	16196	566.125	16088	591.625	25.500
5	13608	599.750	13698	621.125	21.375
6	14198	630.875	13952	644.875	14.000
7	10957	661.125	11044	679.625	18.500
8	8940	686.750	8797	705.250	18.500
9	6168	732.375	6288	753.375	21.000
10	4009	793.750	4039	805.875	12.125
Asian					
Statewide Results					
NAPI2k	API2k	NAPI01	API01	asianimp	
141632	780.375	145536	804.125	23.750	
CARank2k	NAPI2k	API2k	NAPI01	API01	asianimp
1	9333	519.250	8263	556.500	37.250
2	10115	598.250	9701	631.625	33.375
3	11687	644.500	11273	671.000	26.500
4	10367	718.750	10295	743.125	24.375
5	10802	752.500	11066	772.750	20.250
6	13583	768.750	13836	794.625	25.875
7	12907	793.625	13352	814.625	21.000
8	14842	834.000	15725	848.250	14.250
9	20528	876.000	21579	886.625	10.625
10	27468	923.250	29473	930.250	7.000

Hispanic

Statewide Results

NAPI2k	API2k	NAPI01	API01	hispimp
747263	546.000	807078	575.375	29.3750

CARank2k	NAPI2k	API2k	NAPI01	API01	hispimp
1	175898	440.563	181993	482.750	42.1875
2	140010	501.000	144662	537.125	36.1250
3	110066	538.375	116598	567.000	28.6250
4	88735	565.125	92749	594.500	29.3750
5	71895	590.750	75451	618.750	28.0000
6	53382	625.125	55428	647.250	22.1250
7	40460	650.000	43071	673.750	23.7500
8	30612	692.375	32588	711.375	19.0000
9	23177	731.875	24353	750.750	18.8750
10	13028	799.000	13573	807.125	8.1250

White

Statewide Results

NAPI2k	API2k	NAPI01	API01	whiteimp
639875	777.875	625032	794.500	16.625

CARank2k	NAPI2k	API2k	NAPI01	API01	whiteimp
1	9489	549.875	8567	583.500	33.625
2	18346	603.125	17625	630.875	27.750
3	31431	645.875	29348	672.750	26.875
4	48249	685.750	45428	707.000	21.250
5	61911	712.375	58166	731.000	18.625
6	66403	741.000	62793	760.875	19.875
7	84077	767.625	80052	785.000	17.375
8	92833	798.875	90680	812.500	13.625
9	105067	836.500	102389	848.250	11.750
10	122069	884.750	121910	891.875	7.125

Table 6. Improvement for Subgroups: Middle Schools
Description of School Scores for Subgroups (n > 9)

Socio-economically Disadvantaged							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
SD_2k	1079	572.07	560.88	509.31	630.00	341.19	877.13
SD_01	1079	587.41	579.00	525.63	645.13	386.19	877.00
sdimp	1079	15.35	16.31	-3.63	35.06	-171.00	157.94

Descriptive Statistics: sdimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	109	23.03	21.63	6.38	36.63	-41.75	157.94
2	110	23.66	26.03	2.95	41.86	-89.50	102.50
3	111	16.39	17.38	1.06	33.00	-52.50	82.44
4	107	16.46	18.00	-1.63	37.00	-61.63	92.69
5	113	15.16	15.63	-2.31	33.25	-55.00	84.31
6	111	13.57	15.63	-12.75	38.13	-152.25	97.75
7	103	18.26	16.38	-1.88	29.88	-53.75	154.38
8	110	10.49	13.69	-16.75	28.94	-66.50	129.38
9	113	13.30	7.38	-10.63	33.44	-91.63	148.63
10	92	1.18	9.50	-21.19	42.38	-171.00	142.75

African-American

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
AfAm_2k	782	583.04	579.50	508.69	653.22	322.75	890.50
AfAm_01	782	595.16	592.94	522.06	667.56	346.44	887.50
afamimp	782	12.12	10.84	-17.66	41.55	-206.13	347.88

Descriptive Statistics: afamimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	78	19.90	18.00	-6.88	44.56	-117.00	154.38
2	89	15.92	18.38	-12.47	39.75	-127.81	347.88
3	85	18.33	9.50	-15.50	52.50	-153.00	232.13
4	87	8.70	7.94	-11.50	37.00	-145.31	94.88
5	82	11.65	9.19	-11.50	36.69	-92.25	146.38
6	79	16.30	13.00	-23.63	42.25	-98.38	198.44
7	75	10.55	9.75	-36.50	39.25	-141.00	336.13
8	68	7.14	5.75	-17.16	38.72	-157.50	146.13
9	73	4.24	4.00	-41.19	41.75	-112.13	245.75
10	66	5.58	14.19	-26.72	40.06	-206.13	182.75

Asian							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
Asian_2k	814	763.20	779.69	686.75	860.13	404.25	971.50
Asian_01	812	775.90	794.75	702.09	869.34	365.00	974.75
asianimp	812	12.90	12.19	-5.88	36.63	-375.88	204.63

Descriptive Statistics: asianimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	54	20.79	19.03	-7.88	48.31	-69.38	157.88
2	75	8.74	17.13	-12.75	51.75	-363.81	133.75
3	72	16.97	25.56	-6.22	62.97	-375.88	204.63
4	82	17.95	22.56	-3.13	48.25	-146.88	138.75
5	84	14.65	10.94	-8.59	41.06	-200.75	193.00
6	87	10.30	11.38	-11.50	36.88	-125.88	142.38
7	81	11.80	14.25	-6.88	32.69	-268.88	118.00
8	77	15.75	13.38	-1.81	33.06	-65.25	113.75
9	93	13.09	14.88	1.13	31.69	-119.00	107.13
10	107	4.57	3.75	-6.25	12.50	-46.88	92.25

Hispanic							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
hisp_2k	1083	577.42	563.75	504.88	641.13	331.75	938.13
hisp_01	1083	593.05	581.25	524.63	655.00	369.13	901.38
hispimp	1083	15.63	16.38	-3.19	35.63	-187.88	154.94

Descriptive Statistics: hispimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	109	21.34	20.13	5.84	32.75	-76.38	154.94
2	110	24.87	23.06	5.83	42.48	-44.63	104.63
3	110	15.26	16.69	1.59	33.44	-61.56	82.56
4	107	15.47	17.75	-5.63	34.25	-48.88	81.19
5	112	19.02	20.31	2.31	36.81	-89.44	105.25
6	110	13.16	15.50	-6.75	33.00	-69.88	94.50
7	103	17.47	16.88	-1.00	37.50	-47.38	95.63
8	107	8.52	11.13	-10.25	34.13	-146.25	119.56
9	109	14.76	14.25	-7.06	37.56	-187.88	148.50
10	106	5.98	4.25	-22.31	33.41	-121.38	150.63

White							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
white_2k	1047	727.35	733.75	666.25	800.00	324.13	948.25
white_01	1047	737.83	746.38	683.75	804.75	321.00	960.50
whiteimp	1047	10.48	9.75	-4.25	26.25	-178.25	177.06

Descriptive Statistics: whiteimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	66	11.82	16.91	-24.92	47.45	-178.25	169.44
2	105	13.47	16.25	-10.63	38.56	-156.25	133.88
3	106	19.98	22.88	0.78	37.38	-77.88	177.06
4	105	10.42	10.88	-5.94	29.38	-100.75	104.13
5	114	8.67	9.56	-6.00	26.38	-101.88	113.50
6	109	10.56	12.50	-3.50	22.88	-121.88	59.38
7	104	12.97	13.56	-3.25	26.69	-36.00	90.63
8	110	5.68	3.25	-5.38	17.19	-42.88	62.75
9	113	7.18	7.25	-2.13	17.81	-66.88	57.00
10	115	5.59	5.75	-2.25	13.25	-37.38	44.63

Table 7. Improvement for Subgroups: High Schools
Description of School Scores for Subgroups (n > 9)

Socio-economically Disadvantaged							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
SD_2k	814	541.55	532.06	486.09	587.25	329.00	944.63
SD_01	813	542.43	531.38	490.75	588.25	316.69	935.38
sdimp	813	0.84	2.13	-17.31	19.25	-192.13	182.50

Descriptive Statistics: sdimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	75	6.03	4.50	-8.00	16.75	-24.06	68.75
2	80	5.84	8.63	-9.08	22.94	-70.06	57.81
3	86	7.41	5.50	-10.19	23.75	-67.88	109.06
4	81	3.35	3.38	-12.19	20.19	-74.94	80.69
5	86	1.02	1.06	-17.11	19.33	-72.88	67.38
6	80	-2.46	-2.16	-22.98	18.59	-97.63	121.13
7	87	-2.65	-2.38	-23.25	22.00	-127.69	131.88
8	85	-4.10	-0.50	-26.03	19.81	-107.00	75.25
9	81	1.07	1.50	-26.06	23.31	-101.63	119.13
10	72	-7.51	-4.63	-37.13	17.72	-192.13	182.50

African-American

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
AfAm_2k	610	559.92	551.44	502.83	610.03	314.75	953.63
AfAm_01	610	561.85	554.81	496.17	621.38	304.75	942.25
afamimp	610	1.93	2.44	-24.75	27.28	-199.75	307.31

Descriptive Statistics: afamimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	52	6.82	0.19	-14.25	23.63	-95.44	307.31
2	59	-0.18	-5.50	-26.75	18.56	-89.50	211.50
3	66	2.40	4.06	-19.88	26.45	-86.25	99.88
4	64	2.79	3.31	-20.38	22.80	-112.31	96.50
5	69	-1.64	-1.50	-26.94	26.50	-167.19	93.13
6	54	-4.73	-7.69	-34.67	19.84	-131.00	109.00
7	62	13.11	10.56	-14.56	37.94	-166.19	148.38
8	62	3.70	12.00	-28.88	34.22	-199.75	112.13
9	58	-0.60	5.06	-21.75	33.72	-171.38	101.88
10	63	-2.62	-10.88	-50.63	36.25	-129.75	121.13

Asian							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
Asian_2k	636	713.24	718.63	641.72	797.84	392.56	977.38
Asian_01	635	718.49	728.13	644.25	804.75	377.44	976.88
asianimp	635	5.01	5.38	-14.38	25.13	-243.13	190.50

Descriptive Statistics: asianimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	40	20.1	10.7	-18.6	53.8	-152.6	190.5
2	57	5.65	11.25	-22.00	32.69	-193.13	107.94
3	66	10.52	7.94	-9.25	24.09	-89.75	163.94
4	66	10.61	14.75	-10.84	30.94	-82.88	84.38
5	67	2.54	1.25	-18.13	18.50	-121.13	139.88
6	62	-13.33	-0.50	-41.84	23.56	-243.13	85.00
7	66	5.64	5.06	-12.28	27.47	-114.75	106.00
8	64	11.99	9.06	-11.47	31.66	-41.75	162.88
9	68	0.20	4.56	-16.47	22.28	-162.00	66.13
10	78	2.87	2.25	-7.69	15.13	-84.63	77.50

Hispanic							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
hisp_2k	817	552.38	539.00	488.41	599.69	312.00	933.88
hisp_01	817	555.92	539.13	493.91	601.25	327.50	925.25
hispimp	817	3.54	3.63	-13.16	19.63	-116.13	164.00

Descriptive Statistics: hispimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	75	6.13	10.31	-6.75	19.63	-77.13	51.81
2	79	7.47	6.31	-3.06	17.31	-37.94	56.75
3	83	6.75	5.94	-8.81	21.81	-69.50	102.56
4	83	-0.02	-0.19	-15.75	14.25	-49.56	59.38
5	87	2.72	1.13	-14.50	16.88	-52.94	73.31
6	79	0.11	1.75	-16.00	18.88	-65.81	54.13
7	85	2.25	0.13	-18.19	21.72	-101.50	108.69
8	83	3.65	4.25	-18.63	26.38	-116.13	132.25
9	81	5.41	8.75	-14.75	28.94	-86.38	93.88
10	81	1.12	-3.25	-22.38	23.50	-95.88	164.00

White							
Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
white_2k	796	707.11	708.06	658.66	757.00	395.63	964.88
white_01	796	707.92	710.56	659.41	758.13	396.38	965.88
whiteimp	796	0.82	0.50	-14.25	16.88	-230.44	100.38

Descriptive Statistics: whiteimp by CARank_2k

CARank_2k	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	49	1.04	-0.38	-30.84	35.25	-125.00	92.25
2	77	4.19	11.13	-20.19	28.56	-230.44	100.38
3	82	4.98	4.50	-11.38	25.63	-80.50	75.75
4	82	2.34	4.31	-11.16	19.34	-95.50	83.75
5	87	1.07	-2.50	-13.63	12.13	-53.00	86.00
6	81	-3.45	-4.25	-16.81	14.25	-72.38	68.75
7	87	0.51	1.13	-11.13	14.75	-97.38	60.88
8	84	1.07	1.56	-14.38	16.84	-65.50	75.88
9	83	-0.59	-1.00	-11.25	13.13	-60.50	51.88
10	83	-2.46	-2.00	-11.25	7.75	-65.50	35.13

----- END Section 1 Year 2000-2001 Improvement-----

Section 2. API Scores over three years: See-saw or Staircase?

A. Describing Three Years of Scores

To start out, traditional data displays are provided in Table 8 and Figures 4-6. Included in these analyses are API scores for schools present all three years, 1999-2001. Overall trends in improvement for each school type can be seen from the cross-sectional medians and quartiles. As can be in detail seen from comparing the results in Section 1 of this report with the "Year 2000 Update" (Section 2), improvement in school-wide scores and in subgroup scores was smaller for the 2000-2001 interval than for the 1999-2000 interval. In addition to measures of location, it is traditional to display correlations and plots; correlations are given in Table 8 and 3D plots of the 3 years of data are in Figures 4-6 for each school type. The correlations are quite large by typical standards and the plots show school scores in a rather compact band. However, neither the correlations nor scatterplots are terribly informative about growth patterns of individual schools, as very different patterns of growth can give rise to very similar correlations and plots.

Table 8. Data Description, API 1999-2001

Elementary Schools, n=4647						
Variable	Mean	Median	Q1	Q3	Minimum	Maximum
API_99	633.248	631.75	523.75	741.875	311.	958.125
API_2k	671.562	674.125	568.5	773.75	345.875	966.875
API_01	692.526	693.5	595.	789.875	339.313	974.75
Middle Schools, n=1080						
Variable	Mean	Median	Q1	Q3	Minimum	Maximum
API_99	633.729	633.25	537.125	729.	345.438	949.5
API_2k	655.272	655.062	558.875	750.625	357.938	948.625
API_01	668.131	668.375	575.5	762.875	384.375	958.875
High Schools, n=791						
Variable	Mean	Median	Q1	Q3	Minimum	Maximum
API_99	621.836	620.375	543.5	697.625	378.188	965.875
API_2k	636.819	638.375	560.5	713.875	370.313	969.375
API_01	639.074	635.75	562.375	716.75	374.	968.375
Correlation						
	Elem		Middle		High	
API_99, API_2k	0.977		0.983		0.979	
API_2k, API_01	0.978		0.983		0.981	
API_99, API_01	0.964		0.973		0.972	

[see also 3D scatterplots in Figures 4-6]

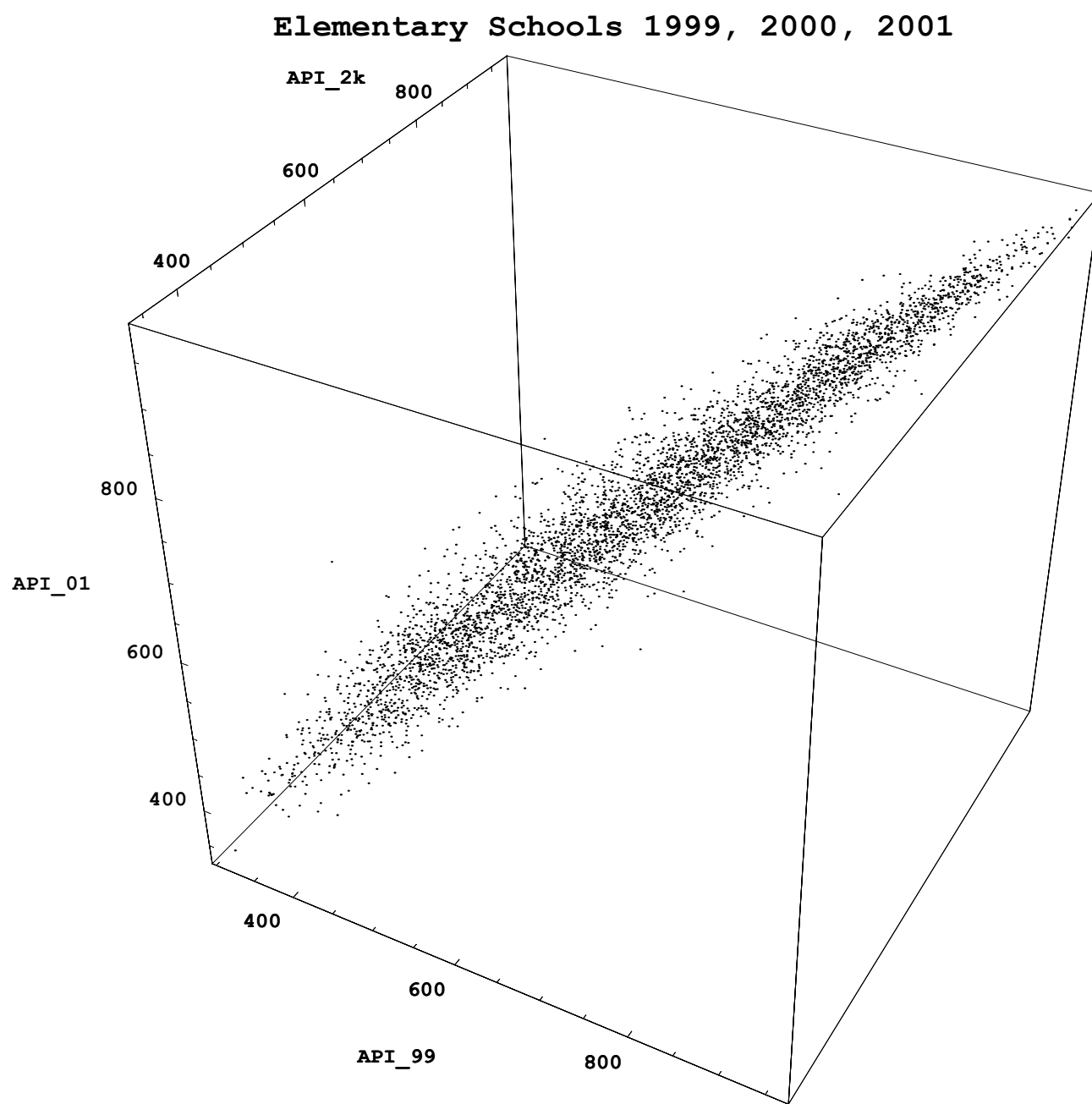


Figure 4. 3D Scatterplot for year 1999, 2000, and 2001 API scores, Elementary Schools

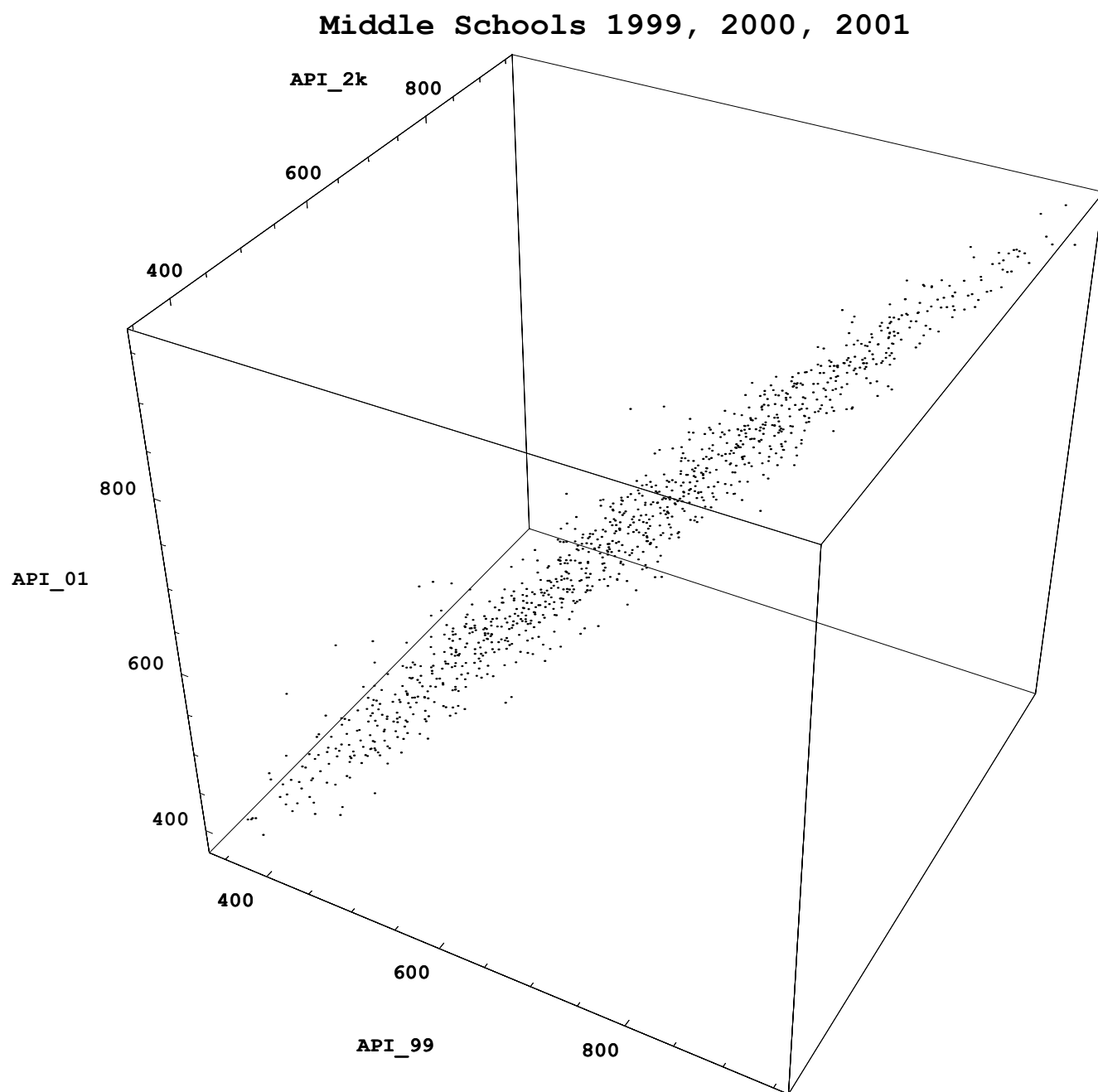


Figure 5. 3D Scatterplot for year 1999, 2000, and 2001 API scores, Middle Schools

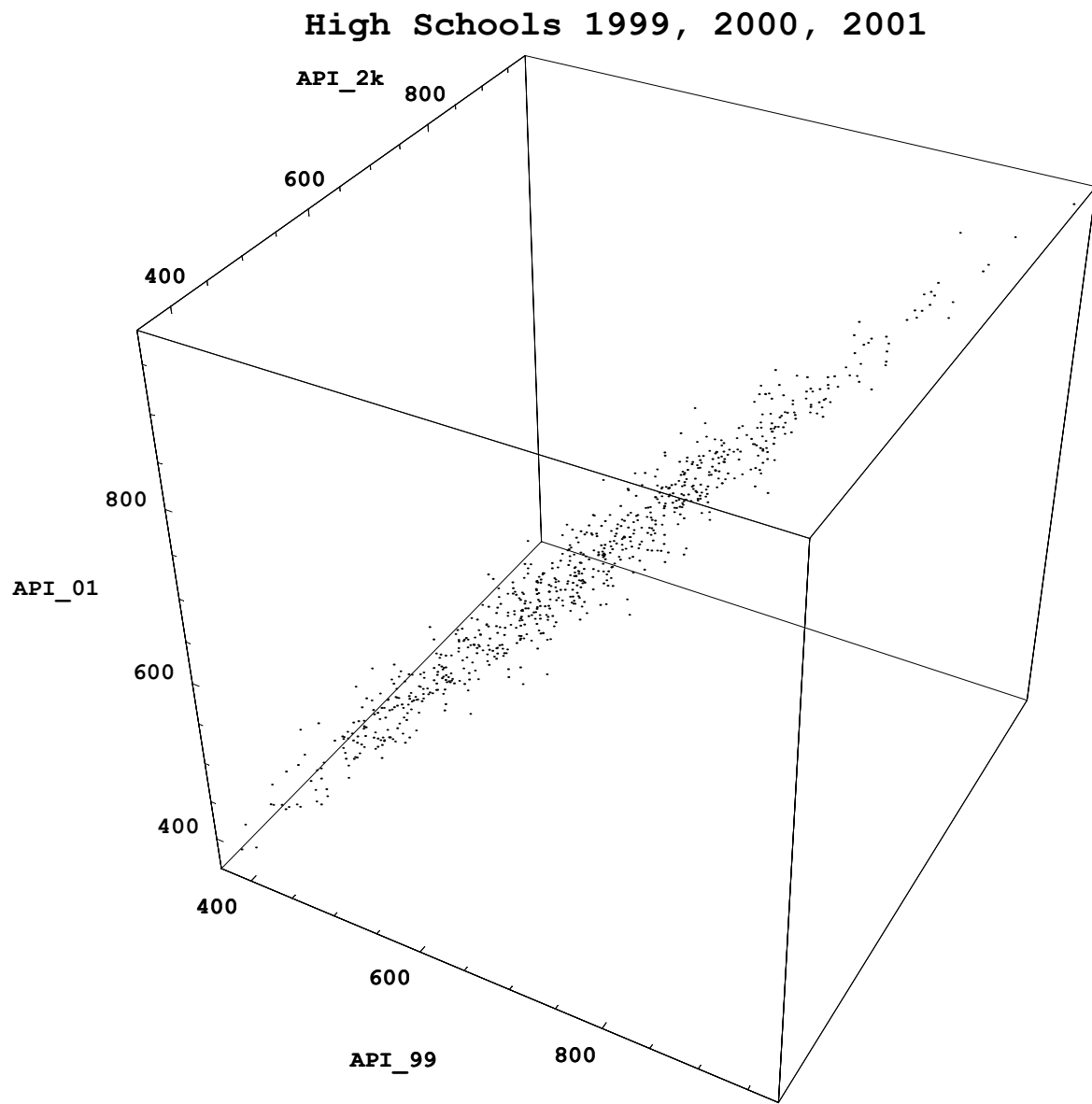


Figure 6. 3D Scatterplot for year 1999, 2000, and 2001 API scores, High Schools

B. Staircase or See-saw?

In many news reports and public statements various parties have used a "see-saw" metaphor to refer to the three years of API data, presumably indicating either a "V" or "inverted V" pattern for a school's score (e.g. schools making initial gains in '99-00 fall back in '00-01). Surprisingly enough, the data can actually be used to investigate that sort of claim. From the statewide data it is easy to identify some schools whose gains in '99-00 were reversed in '00-01, and part of the value of the API as an information system is to allow identification of such schools for possible study.

The reality is that there are many schools making steady improvement for each school that goes up and down. So those desiring a metaphor would be better served by talking in terms of schools on an ascending staircase than schools riding a see-saw.

The main displays on consistency of improvement are provided by Figures 7-9 and Table 9. Each Figure plots improvement in 2000-2001 (labeled APIimp_2k01) versus improvement in 1999-2000 (labeled APIimp_992k). And in Figure 7, for example, one can locate schools such as the Elementary School that improved 90 points and then declined 80 points. That's of interest, but it would be foolish to let individual points overshadow the main message of these data.

Table 9 seeks to quantify the features displayed in Figures 7-9. For each school type, select schools which exceed the stated improvement level (ImpLevel) in the '99-00 interval. Then investigate the subsequent improvement in '00-01 for those schools: for the schools improving at least ImpLevel points in '99-00, what does their improvement in '00-01 look like? First is the proportion of those schools also making positive improvement in '00-01. Second is a list of summary statistics for the '00-01 improvement: lowest decile (10% of the included schools improve less than the lowest decile), lower quartile (75% of the included schools improve more than this lower quartile), median improvement, and upper quartile of improvement.

For example, Table 9 shows that 129 (out of 4627) Elementary schools improved at least 100 points in the 1999-2000 interval. Of those 129 schools better than two-thirds (.674) also had positive improvement in the 2000-2001 interval. The median improvement for those 129 schools is 16 points, and a quarter of these schools improved more than 40 points. Only 10 percent of these schools declined 31 points or more.

Schools making good improvement in '99-00 do not show markedly different '00-01 improvement from the full collection of schools. Out of all Elementary Schools, the proportion improving in '00-01 is .792, not much different from the schools that made at least 50 (or at least 75) points improvement in '99-00. Somewhat striking is that the median 2000-1 improvement for each of the groups of Elementary Schools meeting the Improvement Levels {25,50,75,100} in Table 9 is 16 or 17 points. From Table 1 the median 2000-1 improvement for the entire collection of Elementary Schools is 19. Moreover, the upper quartile of Table 9

Elementary schools at each ImpLevel is between 35 and 40. Upper quartile for entire Elementary Schools in Table 1 is 37. There really is no discernable tendency to fall back after making good improvement.

High Schools provide a less pleasant story overall, as 44% declined in '00-01 and 25% declined more than 10 points. Thus it is not surprising that High Schools that improved in '99-00 show much the same lack of improvement in '00-01. The lack of improvement is constant over '99-00 Improvement Level (e.g. the High School story is equally bleak regardless of the previous improvement level). But even for the High Schools less than 1 in 10 schools that made substantial (at least 30, at least 40, at least 50 points) improvement reverse that improvement with an equal decline in '00-01.

Figure 7.

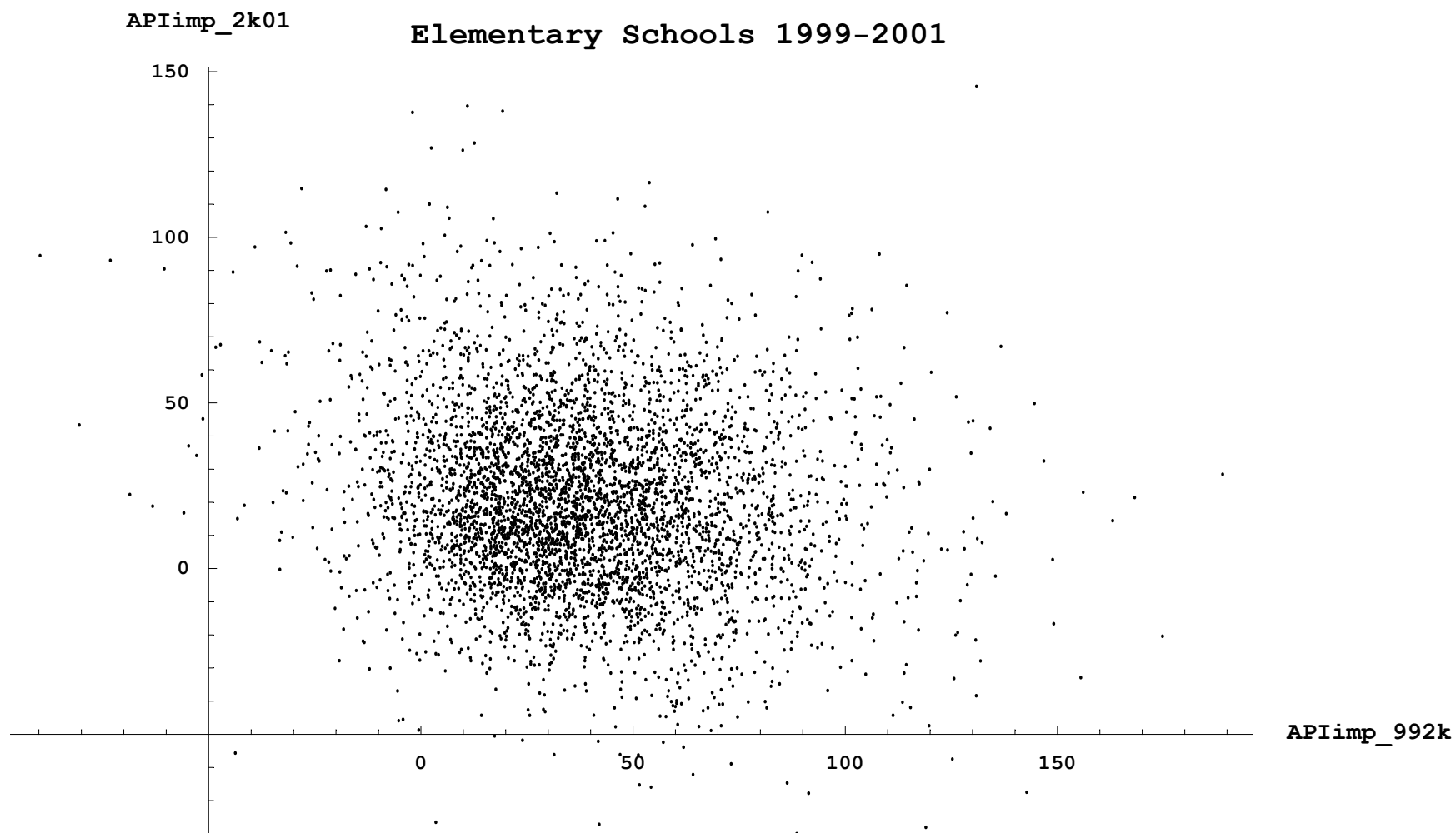


Figure 8.

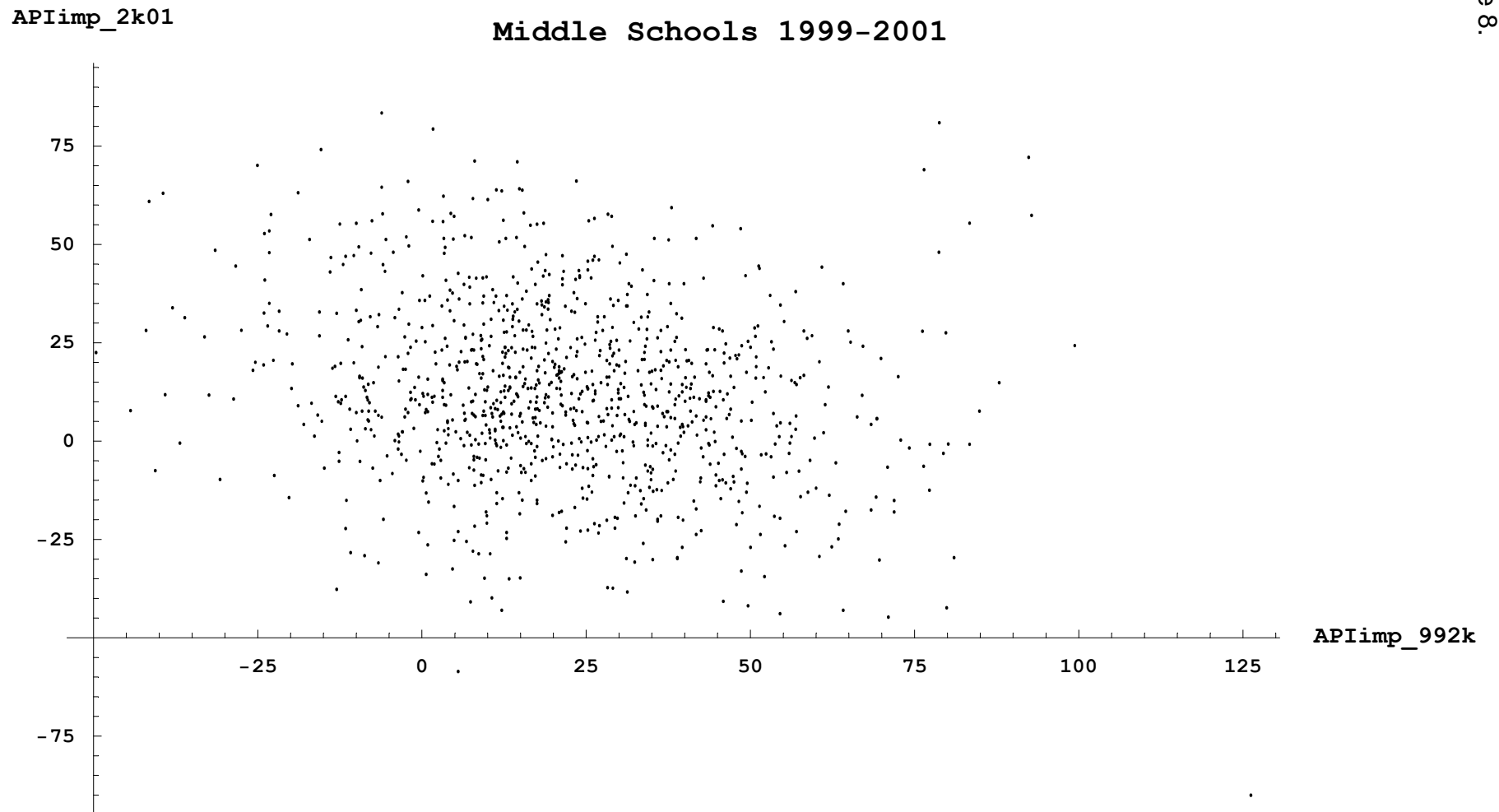


Figure 9.

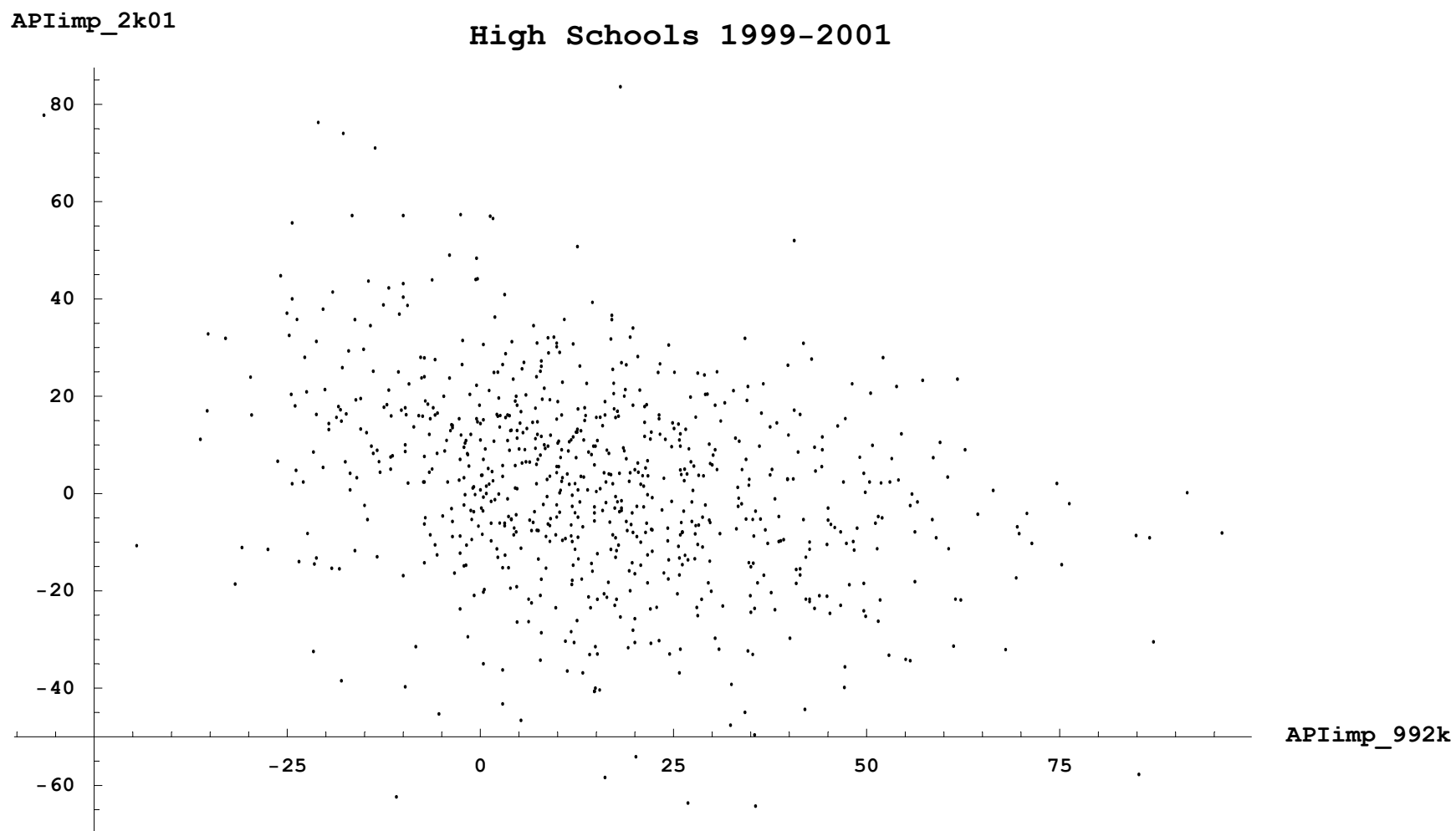


Table 9. Consecutive Improvement?

Elementary Schools (n = 4647)

ImpLevel for 99-2k	Number of Schools exceeding ImpLevel	Proportion of those schools improving in 2000-2001	Improvement 2000-1 {lowest decile lower quartile median upper quartile}
25	3092	0.765	-13.625 1.125 17.375 35.5
50	1457	0.741	-18.5 -0.75 16.25 35.5
75	466	0.73	-19.5 -1.625 16.25 36.5
100	129	0.674	-31.375 -6.125 16. 40.875
125	36	0.583	-33. -20. 8. 28.625

Middle Schools (n = 1080)

ImpLevel for 99-2k	Number of Schools exceeding ImpLevel	Proportion of those schools improving in 2000-2001	Improvement 2000-1 {lowest decile lower quartile median upper quartile}
10	749	0.712	-15.25 -1.625 10.625 23.75
20	535	0.673	-17.875 -4.375 9.125 22.
30	360	0.633	-19. -7.063 6.5 20.625
40	213	0.615	-21. -7.875 6.25 20.25
50	111	0.586	-24.75 -11.875 4.75 23.5

High Schools (n = 791)

ImpLevel for 99-2k	Number of Schools exceeding ImpLevel	Proportion of those schools improving in 2000-2001	Improvement 2000-1 {lowest decile lower quartile median upper quartile}
10	447	0.459	-26.125 -14.125 -2.5 9.875
20	286	0.423	-26.125 -14.625 -4.75 8.
30	172	0.395	-30.375 -18.375 -5.25 7.125
40	106	0.368	-29.625 -18.375 -6.875 4.25
50	53	0.377	-31.25 -14.5 -4.875 2.5

C. Additional Displays

1. Colorized Plots. Inasmuch as lots of attention has been focused on the results of the Award Programs associated with the API, it may be of interest to incorporate the results of the GPA awards in 2000 and 2001 into the displays of improvement in the school-wide API. Figures 10-12 repeat the plots of year-to-year improvement in Figures 7-9 with an additional colorization scheme for the points reflecting GPA awards:

		Award 01	
		N	Y
Award 2k	N	Black	Yellow
	Y	Red	Green

The pattern of colors in Figures 10-12 is as one would expect, with Black predominantly in the lower left corner, Red in the lower right corner, Yellow in the upper left and Green in the upper right. Of course in the Award programs, sub-group improvement is necessary, and the Figures do show examples of strong improvement in the school API scores but no GPA Award. For example, the Figure 10 plot for Elementary Schools shows three schools with black points that made improvement of more than 90 points in '00-01. Figure 11 shows a Middle School in Red which made improvement of more than 75 points in both '99-2k and '00-01.

Figure 10.

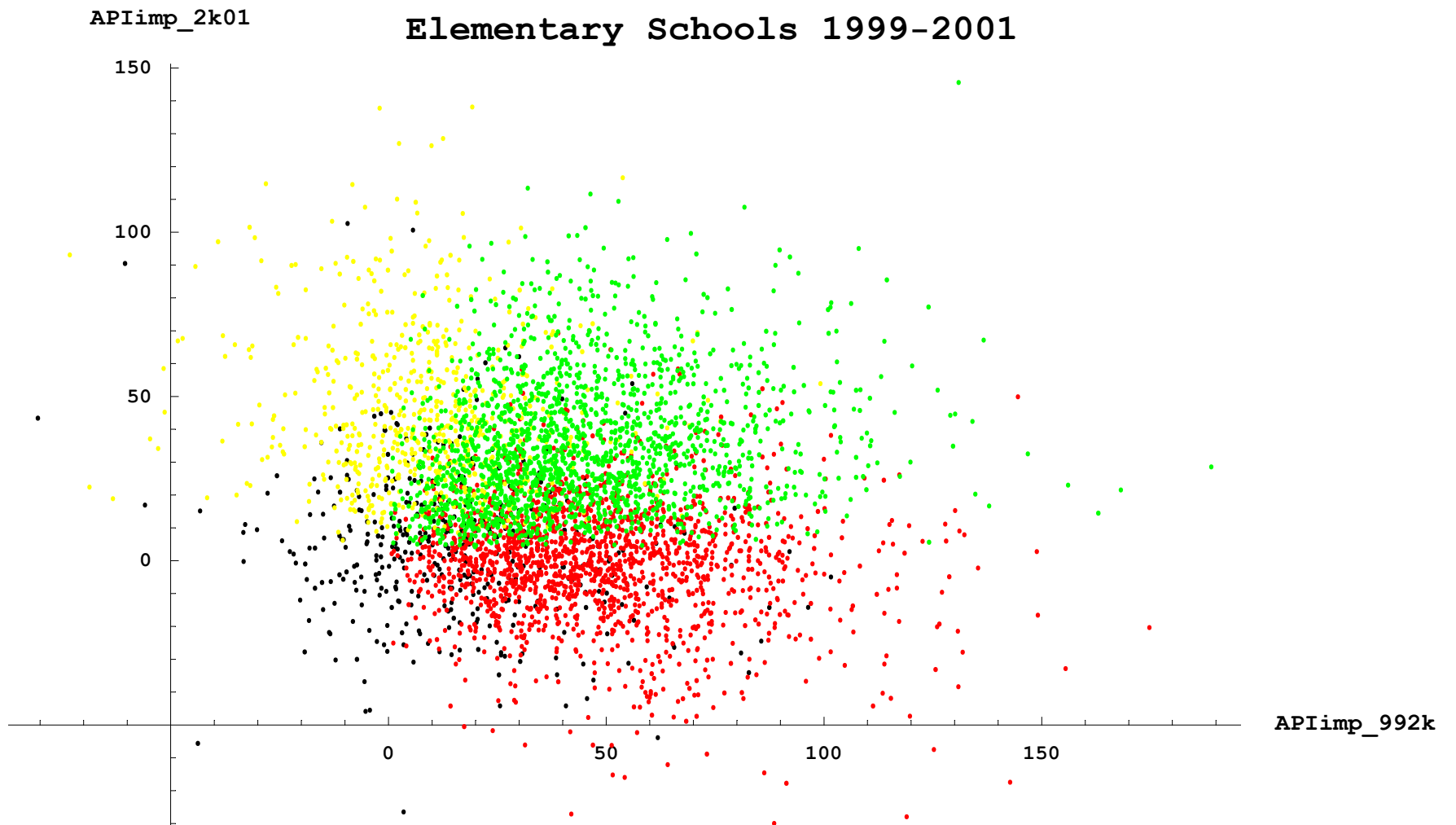


Figure 11.

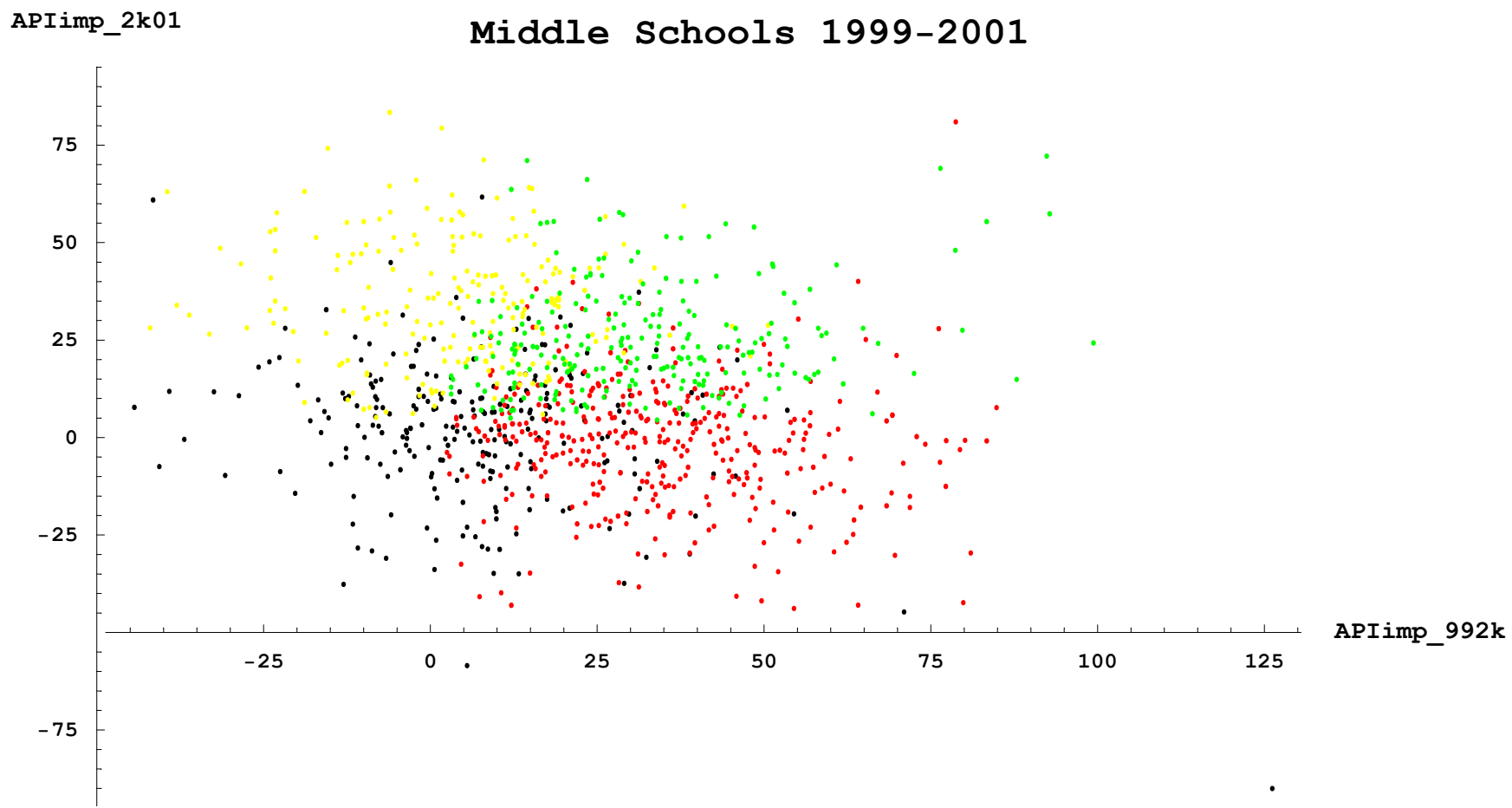
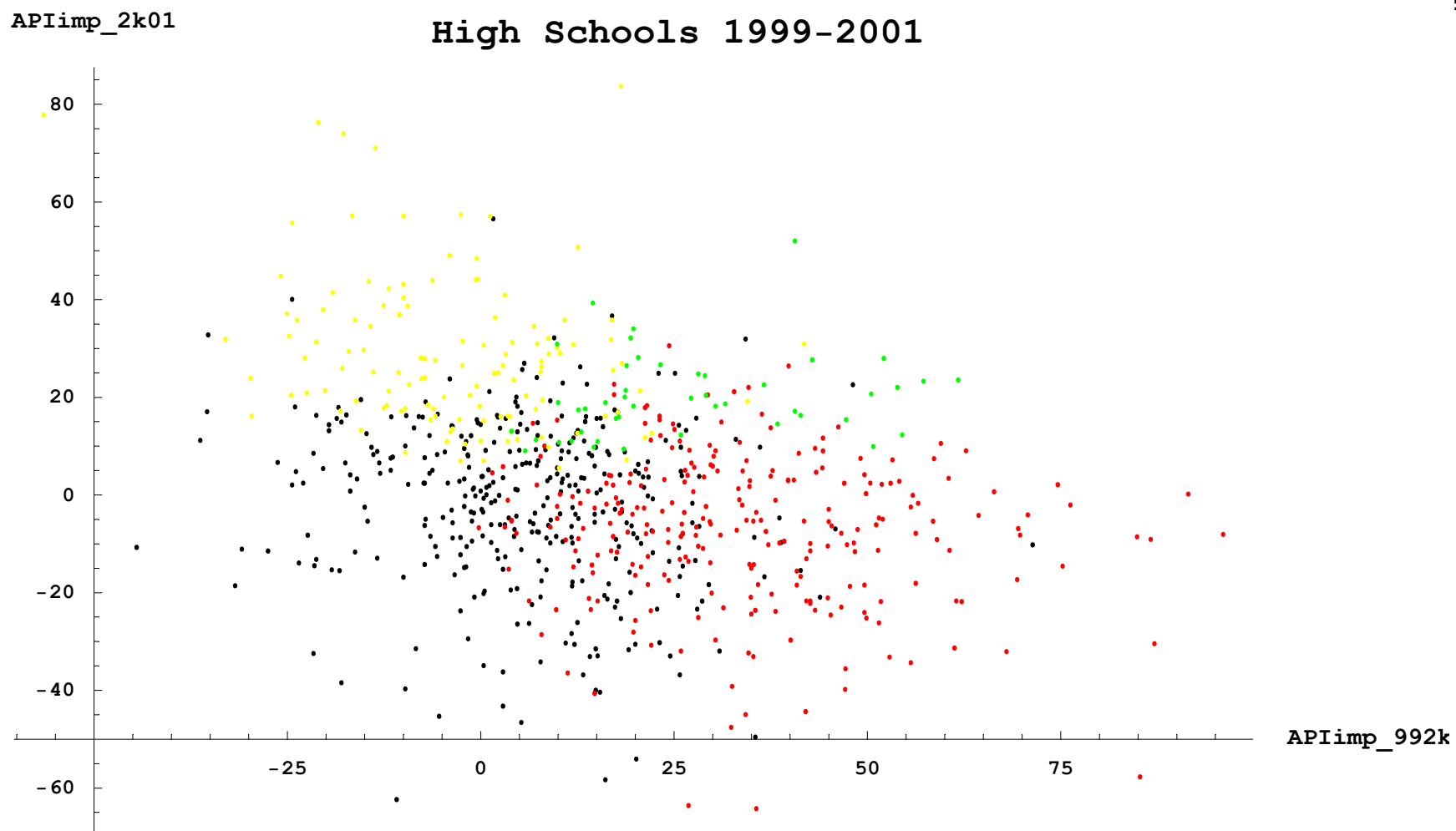


Figure 12.



2. Breakdown by State Decile. Figure 7 displays improvement for all Elementary Schools; the ten plots in Figure 13 provides an additional display by repeating the plot of improvement in 2000-2001 versus improvement in 1999-2000 for each 1999 statewide decile. These displays allow a look at whether the patterns of improvement seen overall is also seen for lower scoring schools (e.g. schools in statewide decile 1 or 2 in 1999). Plots for the upper deciles reiterate one feature discussed in regard to Table 1: that less improvement is seen for the higher scoring schools. Again these plots reveal no large number (or concentration in a decile range) of schools that decline markedly after making good improvement (the see-saw conjecture).

3. Decile to Decile mobility. Another look at the three years of data which complements the 3D scatterplot for Elementary Schools in Figure 4, is provided by the set of crosstabulations in Table 10. For schools in each of the 1999 statewide deciles Table 10 shows a crosstabulation of their Year 2000 and Year 2001 decile ranks. Just as Figure 4 shows a rather narrow band for the plot of API scores, these tables, which can be thought of as placing a 10x10x10 grid on the 3D scatterplot, show a limited amount of mobility (e.g, little or no jumping up and then falling back as in the see-saw). Remember, the API scores defining the deciles change each year (i.e. are higher) so mobility in the decile ranking reflects improvement above or below the typical improvement for schools in that API neighborhood. For example, Table 10 show for the 460 Elementary Schools in year 1999 decile 2, 258 of those schools remain in decile 2 for year 2000, and of those schools 141 also remain in decile 2 in year 2001. (note: for year 2001 growth, CDE did not report statewide deciles, but the decile ranks are easy to compute from the API scores in the research file). The same sort of consistency is seen for higher scoring schools as for the 473 Elementary Schools in year 1999 decile 8, 263 of those schools remain in decile 8 for year 2000, and of those 263 schools 175 also remain in decile 8 in year 2001.

Figure 13.

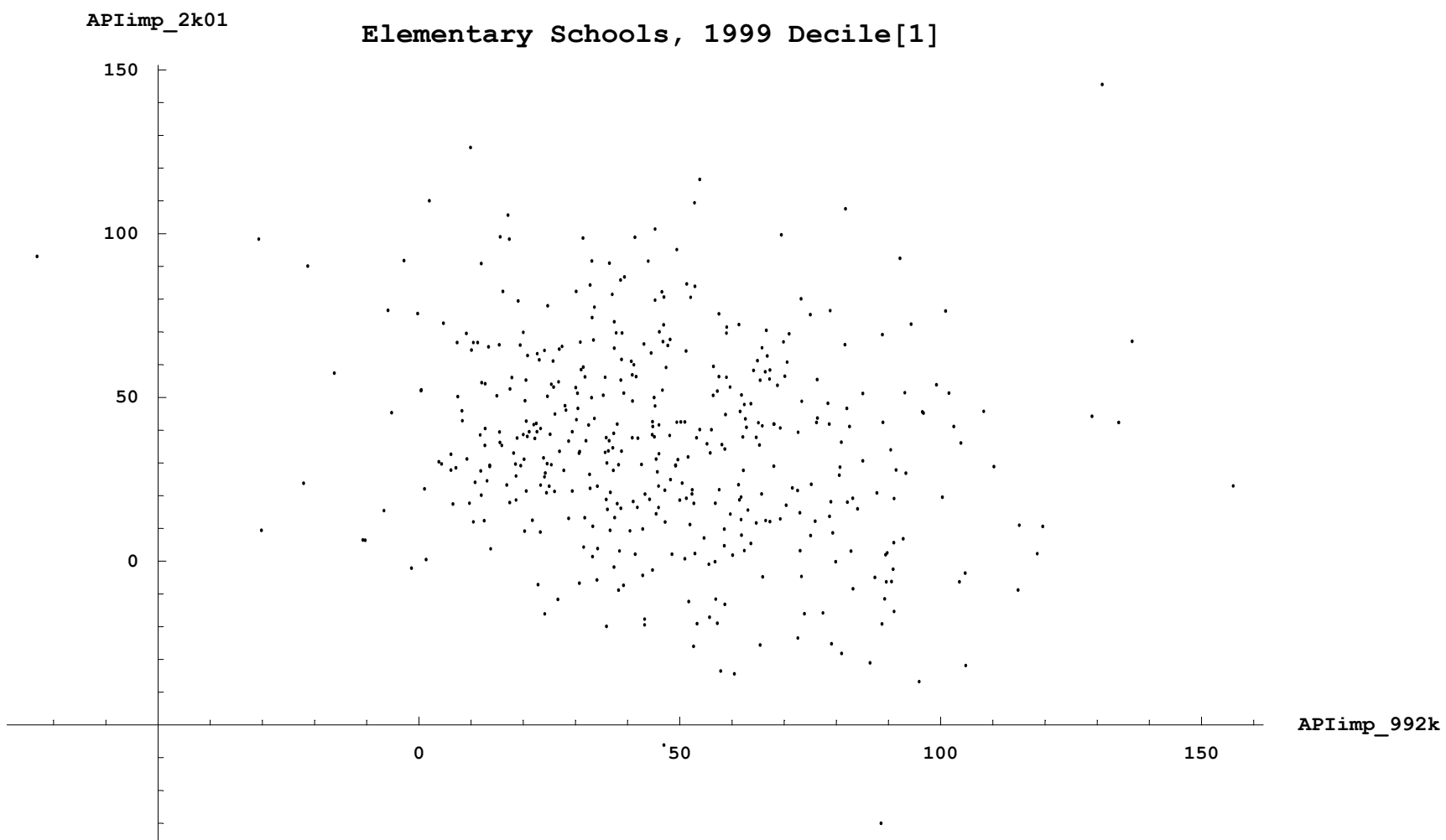


Figure 13.

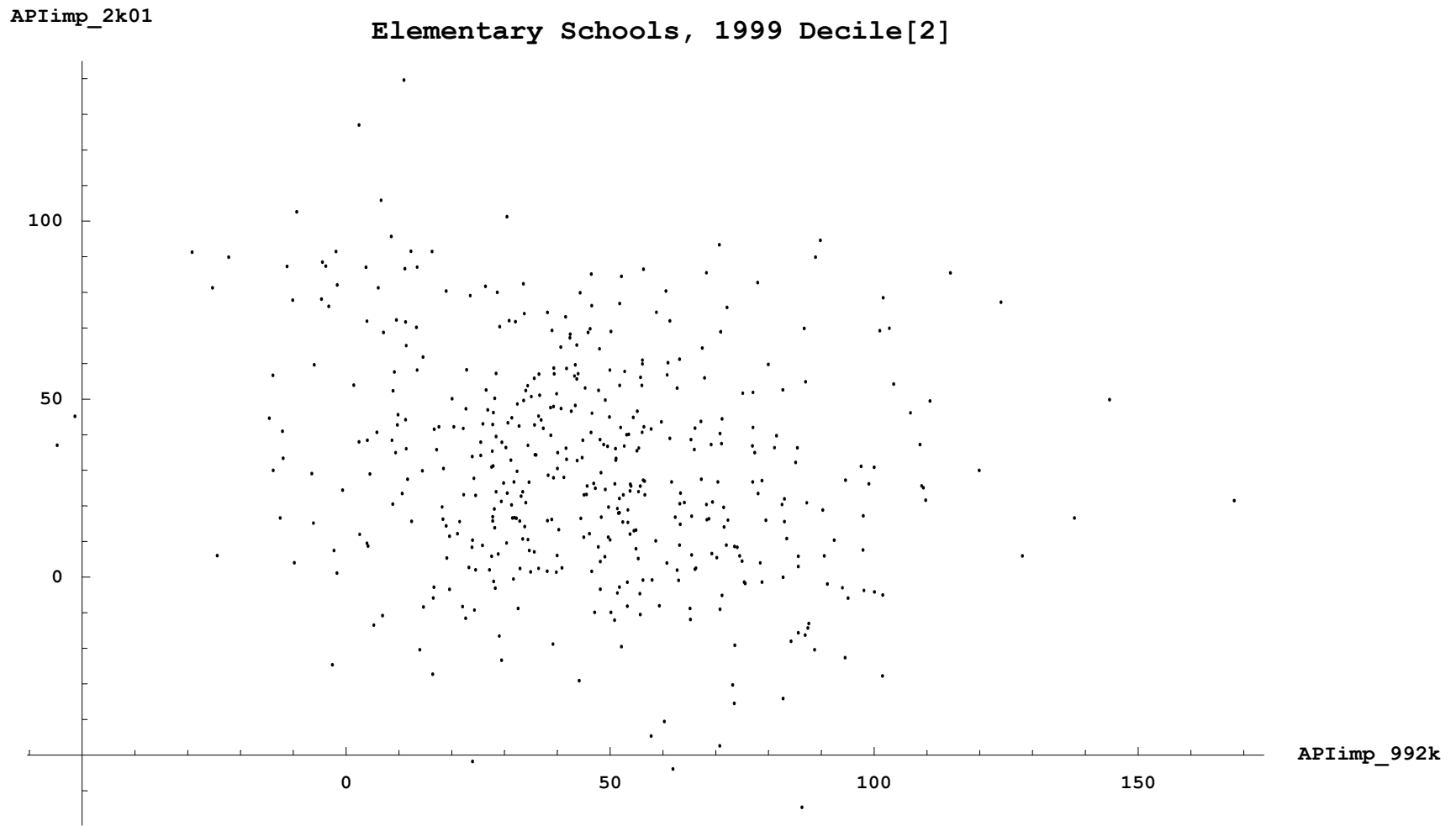


Figure 13.

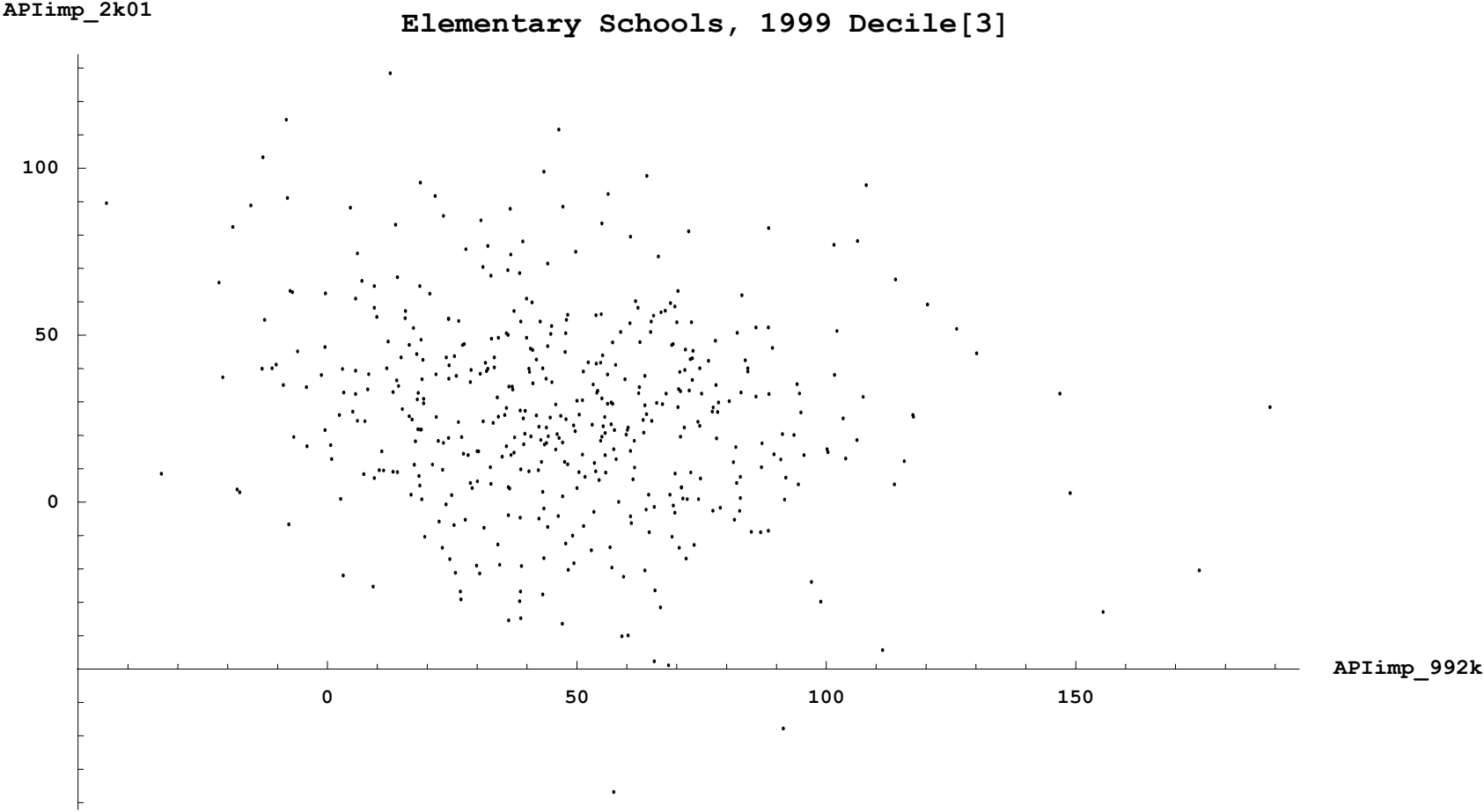


Figure 13.

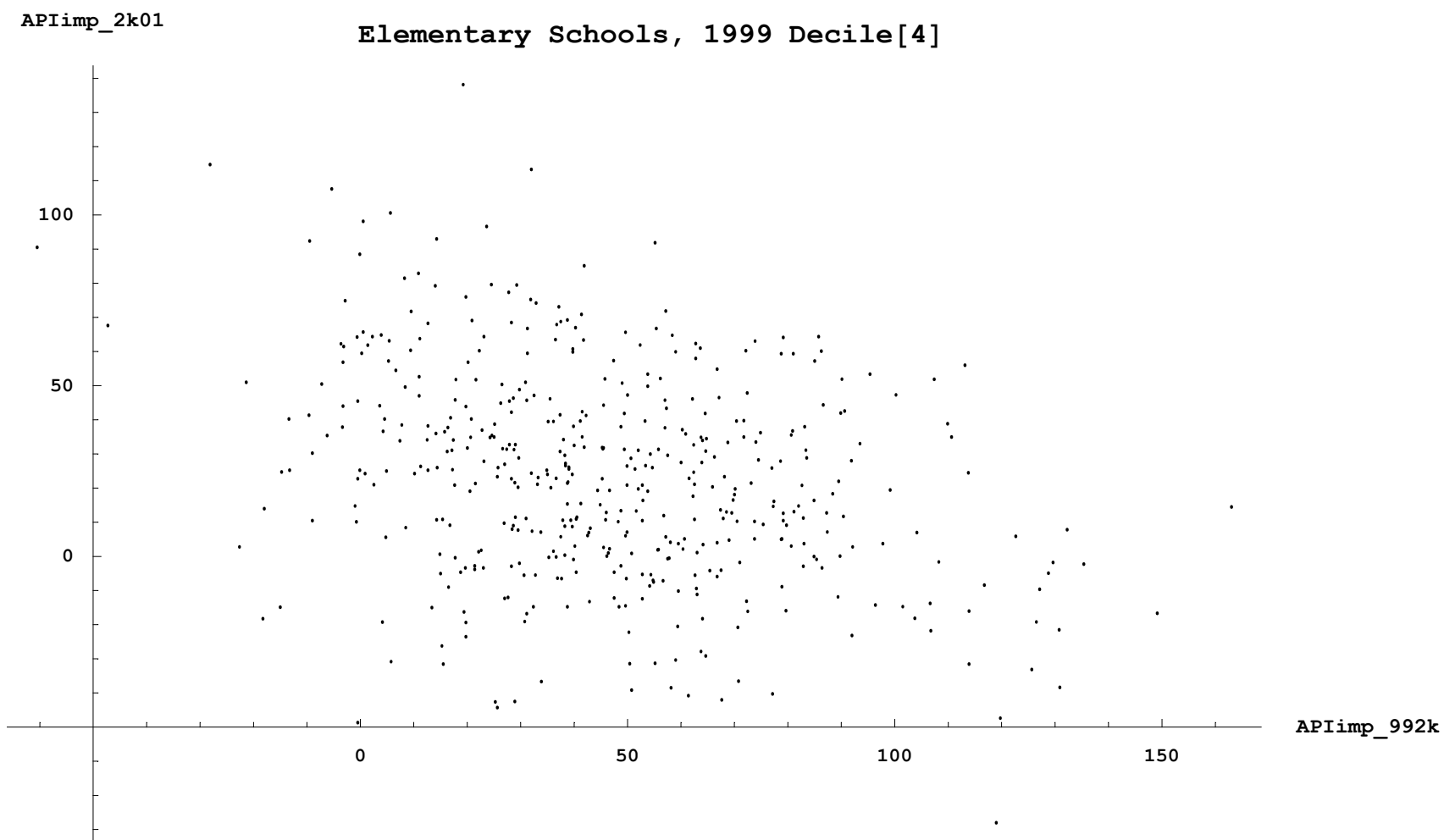


Figure 13.

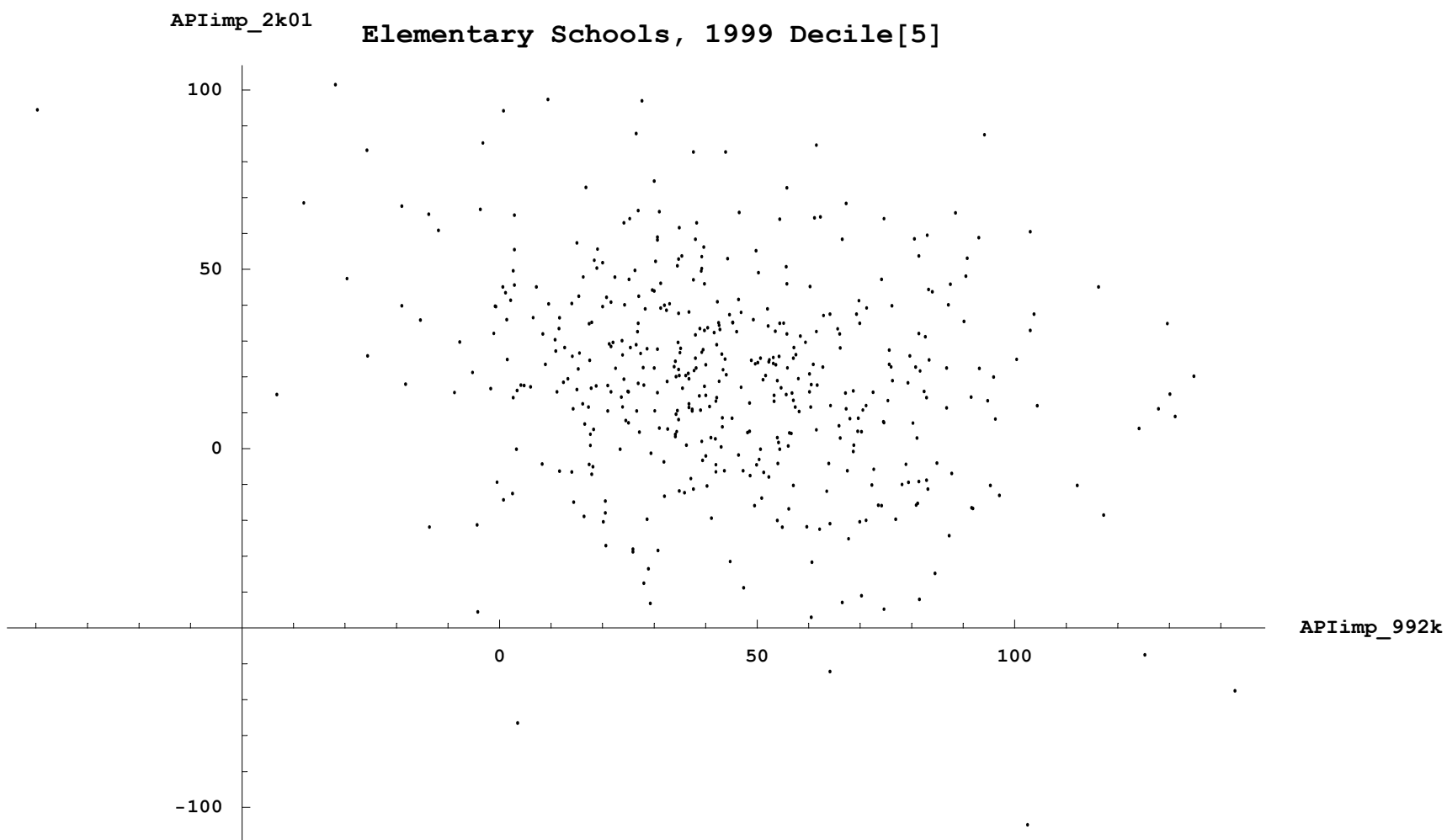


Figure 13.

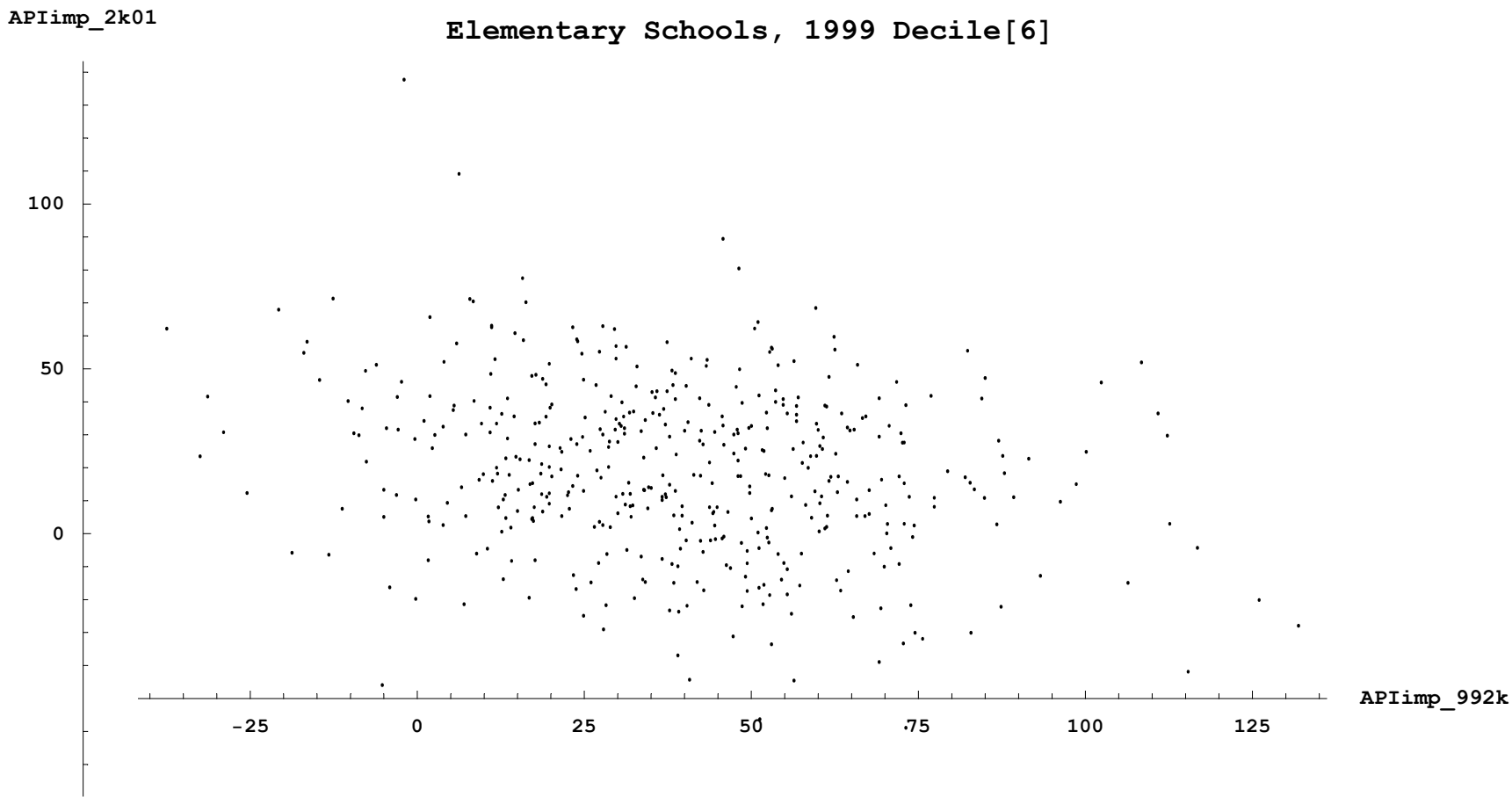
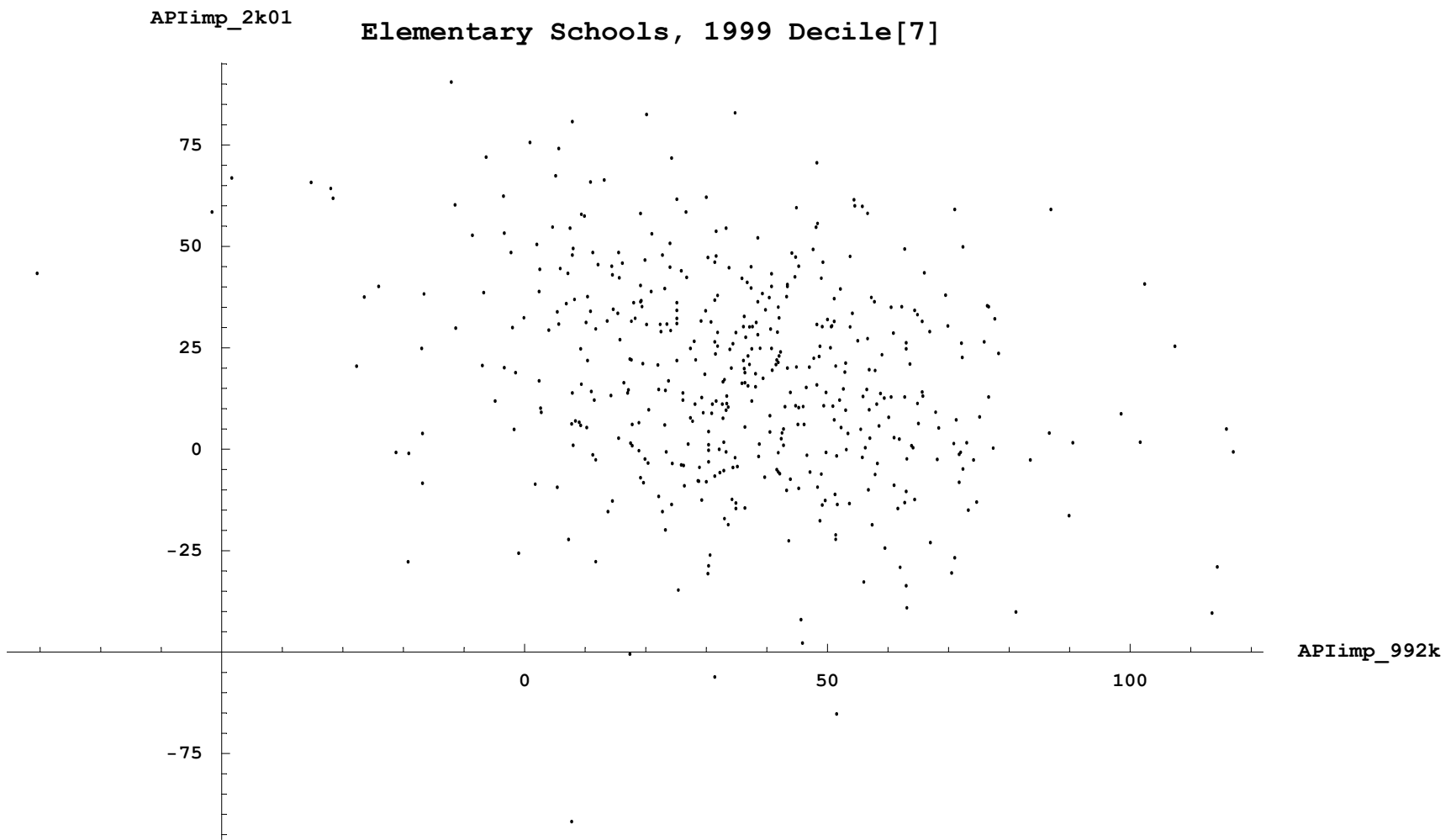


Figure 13.



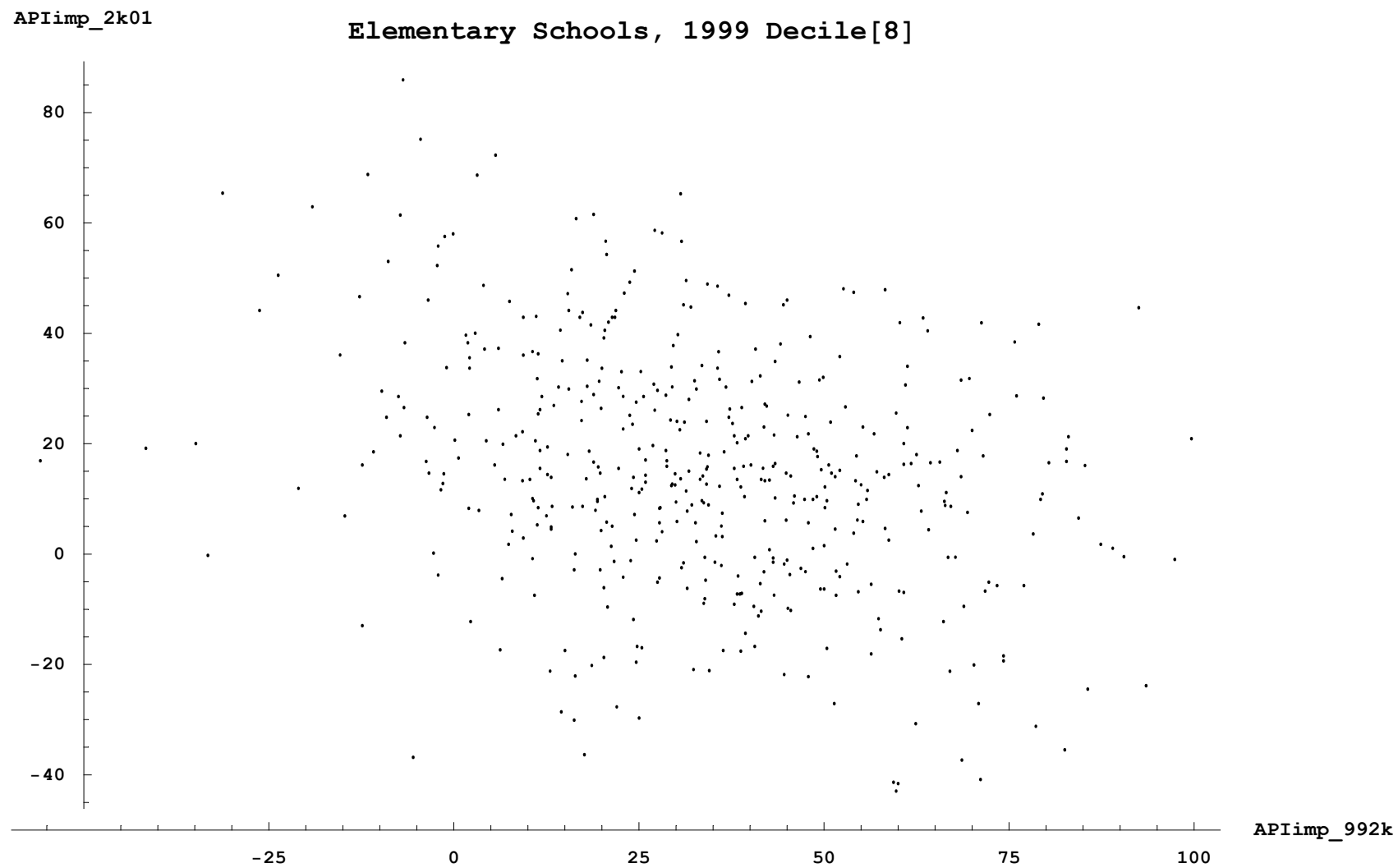
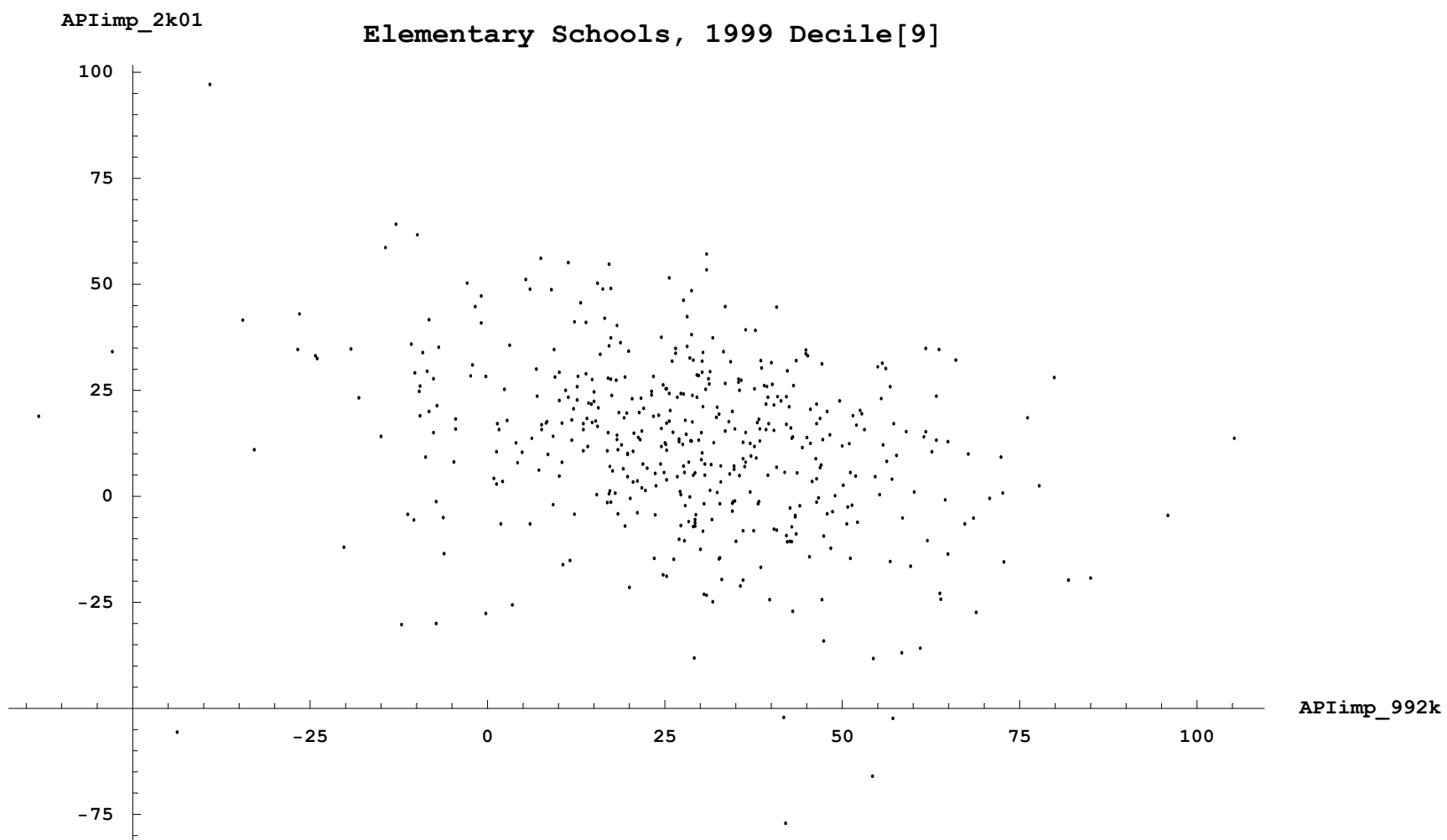


Figure 13.

Figure 13.



APIimp_2k01

Elementary Schools, 1999 Decile[10]

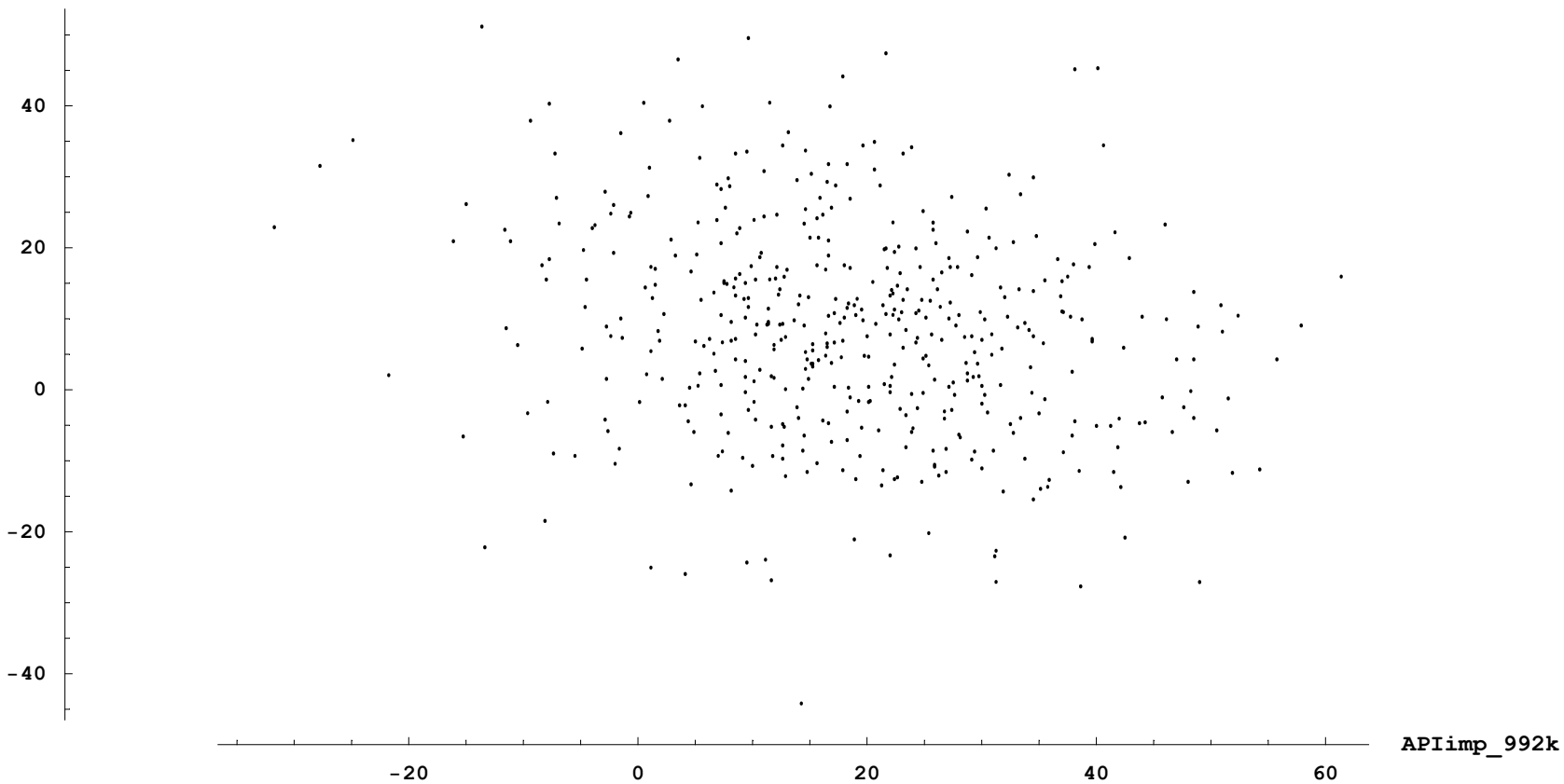


Figure 13.

Table 10. Crosstabulation of Year 2000 and Year 2001 Decile Ranks for each 1999 Decile

Control: CARank_99 = 1

Rows: CARank_2k Columns: CARank_01

	1	2	3	4	5	6	7	8	9	10	All
1	295	51	5	0	0	0	0	0	0	0	351
2	20	43	17	1	0	0	0	0	0	0	81
3	0	1	3	1	0	0	0	0	0	0	5
4	0	0	0	1	0	0	0	0	0	0	1
5	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
All	315	95	25	3	0	0	0	0	0	0	438

Control: CARank_99 = 2

Rows: CARank_2k Columns: CARank_01

	1	2	3	4	5	6	7	8	9	10	All
1	53	38	8	0	0	0	0	0	0	0	99
2	51	141	63	3	0	0	0	0	0	0	258
3	5	36	43	8	3	0	0	0	0	0	95
4	0	0	1	3	3	0	0	0	0	0	7
5	0	0	0	0	1	0	0	0	0	0	1
6	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
All	109	215	115	14	7	0	0	0	0	0	460

Control: CARank_99 = 3

Rows: CARank_2k Columns: CARank_01

	1	2	3	4	5	6	7	8	9	10	All
1	1	4	1	0	0	0	0	0	0	0	6
2	14	61	33	6	0	0	0	0	0	0	114
3	1	55	124	51	5	0	0	0	0	0	236
4	1	4	16	54	12	4	0	0	0	0	91
5	0	0	1	1	3	4	0	0	0	0	9
6	0	0	0	0	3	1	0	0	0	0	4
7	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
All	17	124	175	112	23	9	0	0	0	0	460

Control: CARank_99 = 4

Rows: CARank_2k Columns: CARank_01

	1	2	3	4	5	6	7	8	9	10	All
1	0	0	0	0	0	0	0	0	0	0	0
2	1	1	5	1	1	0	0	0	0	0	9
3	2	14	64	36	8	2	0	0	0	0	126
4	0	3	55	113	50	4	0	0	0	0	225
5	0	0	2	30	41	20	0	0	0	0	93
6	0	0	1	2	8	4	0	0	0	0	15
7	0	0	0	0	0	1	1	0	0	0	2
8	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
All	3	18	127	182	108	31	1	0	0	0	470

Control: CARank_99 = 5

Rows: CARank_2k Columns: CARank_01

	1	2	3	4	5	6	7	8	9	10	All
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	1	0	0	0	0	0	0	0	1
3	0	1	4	4	4	0	0	0	0	0	13
4	0	1	19	62	40	6	0	0	0	0	128
5	0	0	5	45	121	41	3	0	0	0	215
6	0	0	0	6	24	41	14	1	0	0	86
7	0	0	0	1	2	6	9	1	0	0	19
8	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
All	0	2	29	118	191	94	26	2	0	0	462

Control: CARank_99 = 6

Rows: CARank_2k Columns: CARank_01

	1	2	3	4	5	6	7	8	9	10	All
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	5	8	0	1	0	0	0	14
5	1	0	1	14	65	50	2	0	0	0	133
6	0	0	0	4	44	119	60	0	0	0	227
7	0	0	0	0	4	29	36	9	0	0	78
8	0	0	0	0	0	1	6	4	0	0	11
9	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
All	1	0	1	23	121	199	105	13	0	0	463

Control: CARank_99 = 7

Rows: CARank_2k Columns: CARank_01

	1	2	3	4	5	6	7	8	9	10	All
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	1	0	0	0	0	0	0	1
5	0	0	0	2	4	5	2	0	0	0	13
6	0	0	1	2	15	51	43	5	0	0	117
7	0	0	0	0	4	57	133	50	0	0	244
8	0	0	0	0	1	2	30	47	6	0	86
9	0	0	0	0	0	0	0	5	1	0	6
10	0	0	0	0	0	0	0	0	0	0	0
All	0	0	1	5	24	115	208	107	7	0	467

Control: CARank_99 = 8

Rows: CARank_2k Columns: CARank_01

	1	2	3	4	5	6	7	8	9	10	All
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	3	4	2	0	0	9
7	0	0	0	0	1	10	57	44	0	0	112
8	0	0	0	0	0	0	55	175	33	0	263
9	0	0	0	0	0	0	2	21	59	4	86
10	0	0	0	0	0	0	0	0	2	1	3
All	0	0	0	0	1	13	118	242	94	5	473

Control: CARank_99 = 9

Rows: CARank_2k Columns: CARank_01

	1	2	3	4	5	6	7	8	9	10	All
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	1	2	1	0	4
8	0	0	0	0	0	2	7	56	37	0	102
9	0	0	0	0	0	0	2	47	229	31	309
10	0	0	0	0	0	0	0	1	23	31	55
All	0	0	0	0	0	2	10	106	290	62	470

Control: CARank_99 = 10

Rows: CARank_2k Columns: CARank_01

	1	2	3	4	5	6	7	8	9	10	All
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	1	0	1
9	0	0	0	0	0	0	0	5	43	20	68
10	0	0	0	0	0	0	0	0	35	380	415
All	0	0	0	0	0	0	0	5	79	400	484

Archive of Calculations

Following distribution of this document, a collection of files used in these calculations will be made available. A .zip archive will include a set of files in SAS System Viewer version 8 format (.sas7bdat) along with a readme file for documentation. The Zip Archive will be available as file apinotes2karchive.zip at URL

<http://www-stat.stanford.edu/~rag/api/apinotesg01archive.zip>